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DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list—

1928

Nov. 8.... Lecture, " Machinery Installation of R.101," by Wing Com. T. R. Cave-Browne-Cave, before R.Ae.S.

Nov. 15.... Lecture, " Aeroplane Engines in Flight," by R. J. Penn, before R.Ae.S.

Nov. 22.... Lecture, " Weight of Aircraft," by Maj. T. M. Barlow, before R.Ae.S.

Nov. 29.... Lecture, " Production Problems," by F. Sigrist, before R.Ae.S.

Dec. 3–8.... International Aeronautical Exhibition, Chicago, Ill.

Dec. 6.... Lecture, " Control of Aeroplanes by Alulas," by Capt. A. P. Thurston, before R.Ae.S.

Dec. 12–14 International Conference on Aviation, Washington, U.S.A.

1929

Oct. 31.... Guggenheim Safe-Aircraft Competition Closes

EDITORIAL COMMENT

GREAT BRITAIN may or may not have produced the world's fastest aircraft. The speed record attempt made last Sunday by Flight-Lieutenant D'Arcy Greig on the Supermarine-Napier S.5 failed to prove the case definitely. Under a change made in the F.A.I. rules some years ago, it is necessary to beat an existing speed record by five miles per hour in order to get a new record recognised by the F.A.I. In view of the possibilities that exist for minute errors in timing, errors which the best timekeepers in the world cannot altogether avoid, this decision by the F.A.I. can only be regarded as a wise one, since it is obviously aimed at making quite sure, by allowing a sufficient margin, that any errors introduced in timing shall not be as great as the difference between the previous and the new speed record. That is quite evidently the reason for insisting on " steps " of at least five miles per hour.

The Speed Record Attempt

Whether the five miles per hour constitutes an adequate safeguard is, perhaps, open to doubt. For instance, it is conceivable that—merely to take an example, and not because we wish to infer that something of the sort *did* happen—the Italian timekeepers overestimated Bernardi's speed by two miles per hour. It is equally conceivable that the British timekeepers underestimated Greig's speed by two miles per hour. The cumulative effect would then be sufficient to account for the failure to establish a new record. We wish to make it quite clear that we do not suggest that this did happen, but merely that it is a possibility.

If we assume for the moment that an aircraft is travelling at 320 miles per hour along the speed course, then in one second it will travel approximately 470 ft., and in one-fifth of a second 94 ft. It is not difficult to see that there is room here for small errors, errors which in themselves are possibly very minute, but which may for all that have a considerable effect on the final result.

It then seems to come to this, that either we must evolve better timing systems, or we must increase the margin by which a record has to be beaten.

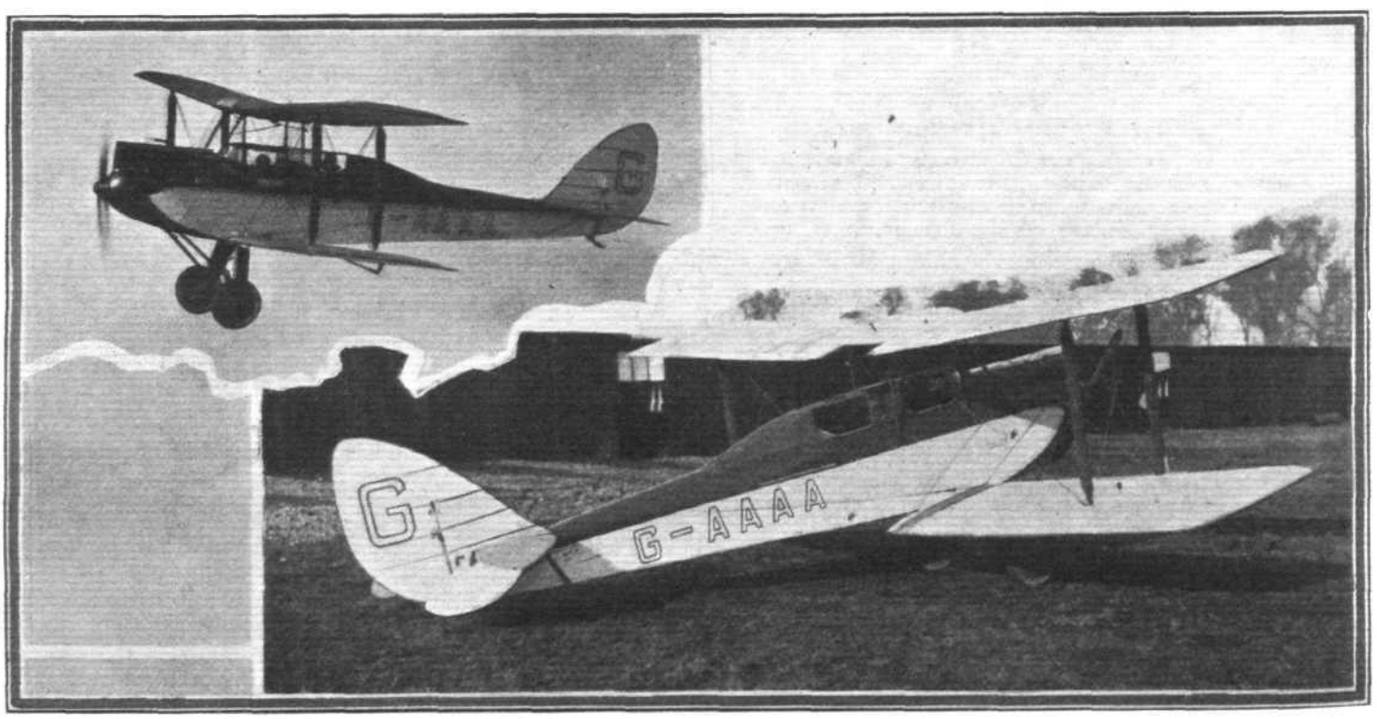
At any rate, this much is known after Greig's splendid attempt that the difference in speed, under the conditions of flying over a measured course, between the Macchi and the S.5, is so small that it is not humanly possible to say which of the two is the faster machine. Whichever wins does so by a margin that is of no practical significance.

Whether or not the S.5 will ever beat the existing speed record is at present extremely uncertain. That two or three miles per hour might be gained with a different propeller is, perhaps, not outside the bounds of possibility. On the other hand, the propeller used in the attempt may quite likely be the best that is possible, in which case no gain is to be expected in this direction.

Looking at the S.5 it is not easy to see where any reduction in drag could be effected. The fuselage, nose, fairing of wings into fuselage, and general streamlining appear to go as far as it is possible to go. The only remaining feature then would seem to be the floats, and again, these do not appear capable of much improvement. However, without being in possession of much fuller information than we have available it is impossible to know definitely, and it is, perhaps, permissible to hope that certain small improvements may be found which can be made without much delay so that another attempt may presently be made. Otherwise there is no point in proceeding, as the machines for next year's Schneider Trophy Race should be coming along, one of which might more readily be able to beat the record.

Everyone who saw the attempt is very full of admiration for the way in which Flight-Lieut. D'Arcy Greig handled his machine. To be perfectly frank, when it was first announced that he had been appointed to make the attempt, we were a little doubtful. Greig had had no previous experience of high-speed work, and but little was known about him. That he should, with such relatively little practice, have mastered the S.5 in the way he has done is not only proof of quite exceptional abilities on his part, but indicates that every time the personnel of the High-speed Flight is changed, there is cause to believe that good pilots will be found who can take over and carry on where the retiring personnel left off. That augurs well for the future development of high-speed flying.

While naturally disappointed that Great Britain did not succeed in establishing a new world's record, we feel there is no grounds for pessimism. Greig, the S.5, and the Napier engine proved a wonderful trio, and Britain has cause to be proud of them. The only, or at least the main, regret is that had the authorities done the sensible thing, the world's speed record would without a doubt have stood to the credit of Great Britain for quite a long time. At Venice, after the Schneider Trophy Race, an attempt should have been made on the record. It would then have been the task of Italy to beat that record instead of establishing a record when they did, for us to beat. Instead of that we wasted many weeks while the Schneider machines were being brought back to England on board a slow old collier or some such vessel. However, we did not do the obvious and logical thing, and in the meantime the Italians, with commendable energy and enterprise, got their Macchi in shape for an attempt, and de Bernardi established a speed record which brought well-merited prestige to Italian aviation.



["FLIGHT" *Photographs*

A "MOTH" COUPÉ: The De Havilland Aircraft Co. has recently produced a variant of the standard "Gipsy Moth" by adding a small "roof" over the cockpits. The machine is not intended as a separate model, but for use in cold climates where some protection of the occupants is desirable. In the flying view the pilot may be recognised as Captain de Havilland himself, and the machine, G-AAAA, is his personal "bus."

FLIGHT
AIRCRAFT ENGINEER AIRSHIPS

THE ATTEMPT ON THE WORLD'S SPEED RECORD

By MAJOR F. A. de V. ROBERTSON

AT Venice last September, I said to one of the British High Speed Flight, " As soon as the race is over, I suppose you will go for the world's record in a day or two, as was done after the two Schneider races in America." The pilot seemd surprised, and said " Oh no, if we did the record would go to Italy." Apparently the team had never thought seriously about the matter, for which the pilots are not to be blamed but which seems a very serious oversight on the part of the authorities. Had one of the team, it would not have mattered which, put up a speed of 319 m.p.h., next day, as could have been done in all probability without much trouble, that record would now be standing to the credit of Great Britain. That was the first and greatest mistake, and from that has sprung any amount of trouble, tragedy, and disappointment, to say nothing of expense.

After the death of Kinkead last March and the loss of one of the three Supermarine-Napier S5 racers, the action of the Air Ministry in starting to build up a new High Speed Flight was certainly right, and in Flight-Lieut. David D'Arcy Greig, D.F.C., A.F.C., they certainly seem to have found the right officer to command that Flight. One may also approve, though the point is not universally admitted, the policy of entrusting the attempt on the record to the new Flight, rather than putting one of the Schneider team on special duty to make the attempt. Maggiore Mario de Bernardi had, on March 30, established a record of 512·776 k.p.h. = 318·620 m.p.h., and there is no reason to suppose that any pilot in the Royal Air Force would have had a better chance of beating that by the requisite eight kilometres per hour than had D'Arcy Greig.

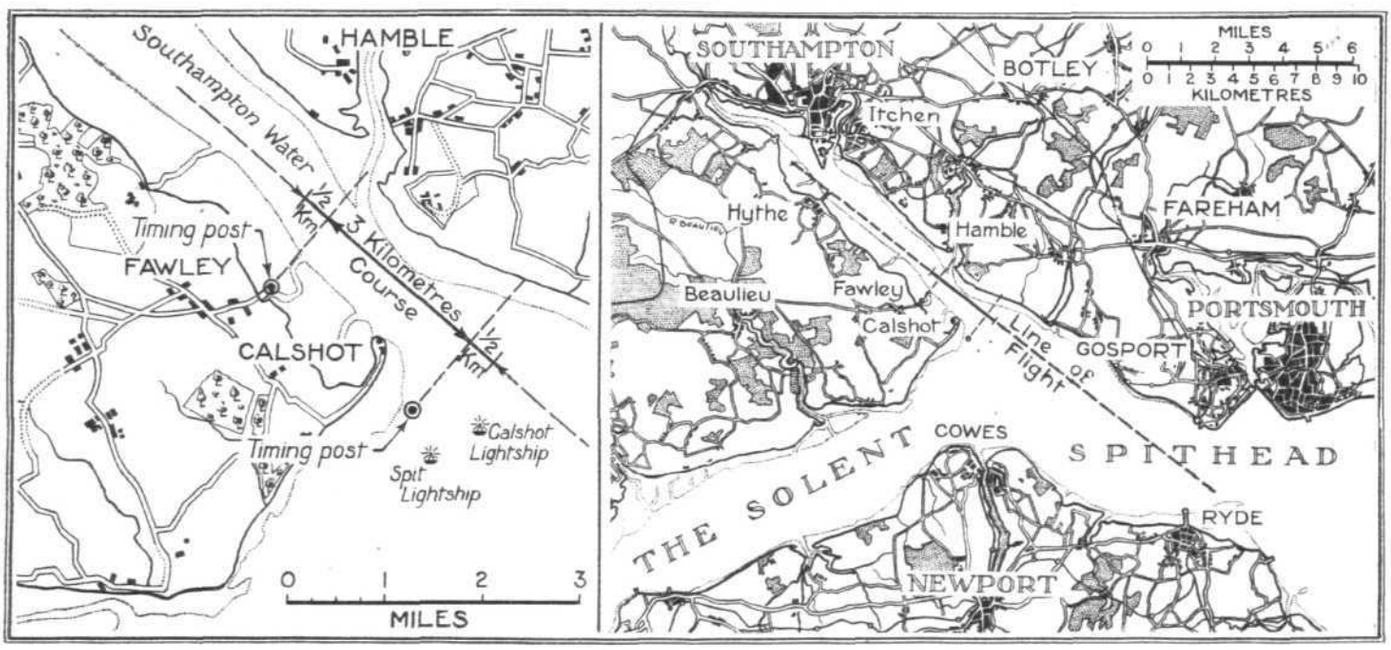
What could have been done was to expedite matters. That would have been an advantage in various ways. Had we discovered during the summer that the present combination of machine, engine and propellor was not sufficient to break Bernardi's record, the knowledge would have been of distinct value. It is part of the organization of the Service that all seaplane development and experimental work should be carried out at the Felixstowe station, and perhaps it is not easy for the Service to alter its organization in a hurry. One feels, however, that had a man like Signor Mussolini been in charge the change would have been made. As a matter of fact, it was made ; but it was made too late. In September, the High Speed Flight was transferred temporarily from Felixstowe to Calshot. Had that transference taken place some months earlier, the attempt would certainly have been made long before November. For various reasons, mostly geographical and meteorological, Felixstowe has proved unsuitable for high speed work. In an amazingly fine summer there were very many days when it was not possible to take up a racing seaplane at Felixstowe, whereas at Calshot the conditions were all that could be desired. In the autumn, however, Calshot, though still far preferable to the North Sea station, is anything but ideal. Too often the pilot finds himself between the Scylla of bad visibility and the Charybdis of rough water. It takes a breeze to clear away the mist, and that stirs up the waves. Ideal intervals are few, far between, and brief in duration. Consequently, there was scant time for getting in the necessary training flights and the test flights, and practically none was left for experimenting with airscrews of various pitch. It speaks volumes for the ability of D'Arcy Greig as a pilot that, starting with no experience of seaplanes or of high-speed work, he should in such short flying time have acquired such perfect mastery of such very delicate aircraft. He started practice on a " Flycatcher " seaplane, while the Gloster Aircraft Co., Ltd., modified the three Gloster biplanes as intermediate high-speed machines. The upper planes were raised some inches so as to improve the view, and this reduced the maximum speed to about 250 m.p.h. D'Arcy Greig flew them at Felixstowe. In September he moved to Calshot to get to work on the two Supermarine racers. These were N 219 with direct-drive Napier, which was flown by Worsley and finished second in the race, and N 220 with geared Napier, which was the Schneider winner. Not by special design but more or less by chance, the engine used in N 220 during the race was again installed in that machine.

With frequent interruptions due to weather, D'Arcy Greig put in a few flights on N 219 and then felt ready to take up N 220. His first flight on that machine showed some alteration to the rigging to be necessary. The machine was flying with one wing down. Meantime the petrol system was looked over. In the race, Webster " revved " the engine up to 3,300 r.p.m., but Greig intended to work the revs. up to 3,900 of thereabouts when diving on to the course. The engine had proved on the bench that it would stand that rate. But when the machine was flown with a pressure gauge, the instrument showed the pressure to be too high. There was great consternation, and it appeared that the exit hole from the header tank was of larger diameter than the pipe leading from it. Experts wrestled with the problem for days, but finally it was found that the gauge which had been used

["FLIGHT" *Photograph*

THE SPEED RECORD ATTEMPT : Testing the Napier engine of the Supermarine S.5 at Calshot.

was reading incorrectly, and that the system itself was all right. Then followed more delays while depressions from the Atlantic and secondaries chased each other across the British Isles, until at last, on Saturday, November 3, a ridge of high pressure shed its benign influence on these islands. D'Arcy Greig took advantage of it to make his final test flight on N 220. He found that all was well except the propeller. The engine over-revved, and the smoke and fumes caused him some inconvenience. The propeller was therefore changed for another which, I understand, was of similar pitch to that used on the machine in the race. Even to the lay mind it does not seem right that there should be uncertainty about the propeller on the very eve of such a very important event as an attempt on the high-speed record of the world. I understand that at Calshot there is a whole series of Fairey airscrews which will, in due course, be tested out on the racing seaplanes; but it does seem a terrible pity that the arrangements had not permitted this testing to be done in the summer when the weather was good. It may be that no other propeller would have given better results than the one used. I am not in a position to say, because I do not know what propeller was used by Kinkead in the flight on the day before his death. On that flight his air speed indicator was reading at about 330 m.p.h. The instrument was believed to be reading low, and, of course, Kinkead was not getting the highest possible speed out of his machine. He



THE ATTEMPT ON THE WORLD'S SPEED RECORD : On the left, a sketch map of the speed course over Southampton Water, showing timing posts, etc., and on the right a general map of the district.

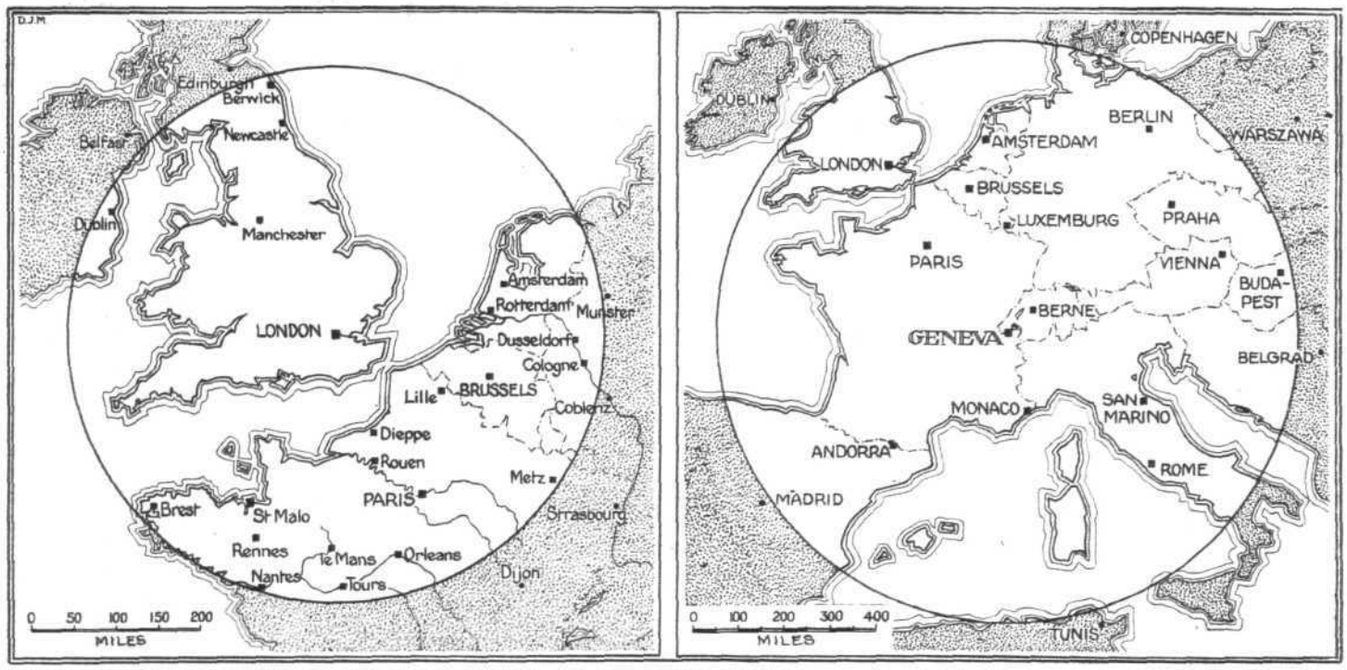
hoped with full throttle and after a dive to attain a speed of 340 or more m.p.h. It was for this reason that everyone was so disappointed when D'Arcy Greig could not manage more than 322·63 m.p.h. on his best course.

Some slight modifications were made to the machine. The heads of the rivets in the floats were not flush, but the same air intake ports were closed as in Kinkead's machine, and superfluous inter-float wires were removed.

On Saturday night it rained fairly hard, and the cars which kept arriving at the Montagu Arms hotel at Beaulieu at all hours throughout the night were in a very draggled condition. Official time-keepers and others were possibly quite relieved when at 6 a.m. on Sunday, November 4, the hotel porter brought news that a mist lay over Calshot and there was no need to be there at dawn. Probably this fact was less welcome to the party of sportsmen who drove straight to Calshot air station during the night, and, having no passes for admission, slept the rest of the night in their cars outside the gate. Mr. Jackson, the meteorological officer at Calshot, is a perfectly uncanny prophet of local weather conditions, and he announced that the weather would clear about noon, and that flying should be possible any time after that. Sure enough, it came to pass. Most people who mattered arrived at the air station about 10 a.m. and found the Isle of Wight perfectly invisible. But in a couple of hours a horizon was growing up on all sides. The wind was due south, blowing at not more than 11 m.p.h. The sea was almost glassy, but not quite so. At 1 p.m. N 220 was wheeled out of its shed, and after various preliminaries and final consultations with Mr. Jackson, the engine was run up at 1.17 p.m. for about 10 minutes by Mr. Smith of the Napier firm. All was found to be O.K. and the engine was then stopped. It was not the intention on this occasion to taxi out for a couple of miles, throwing up spray and risking a chance of the plugs giving up. As at Venice, the engine was to be started when the machine was in position to take off by a starter in a small boat. D'Arcy Greig climbed into the cockpit, the machine was launched, and a motor boat towed it and the small boat out into Southampton Water, heading south. There were 35 gallons of petrol in the float when the engine was run up, and at the last moment four more were put in as a precaution, because the pilot had announced his intention of flying the course six times. The rules say that any four consecutive flights over the course may be taken for the record. The 39 gallons would give enough for over half-an-hour's flying, as well as the running up.

When the machine was in position, the small boat came alongside, and the starter was connected with the engine This operation took about 20 minutes, and it was 2 p.m. when the propeller began to revolve. The pilot taxied away from the launch, but did not rev. his engine very vigorously, and the petrol supply system did not get into working order at once. After about 2 minutes the engine stopped, the launch had to come up again, and the business of connecting the starter had to be gone through once more. This time it did not take so long, and by 2.13 p.m. the engine was really working. D'Arcy Greig went away in a long hydroplaning run, and at 2.15 the seaplane lifted off the water. All the spectators on Calshot Castle were immensely relieved, because, although the visibility at the time was perfectly stereoscopic, a nasty looking mass of clouds was coming over the horizon to the south, and seemed to be rather in a hurry.

The pilot climbed at once to the permissible height of 400 m. (about 1,300 ft.) over Cowes, turned east over Ryde, swung into the direction of the course, and then commenced to dive. The best angle of dive had been worked out for him at the R.A.E. at Farnborough, but with so little practice it was astonishing that he should have been as accurate as he was in flattening out 500 m. short of the line. His dive was a most remarkable sight, and to describe it one is almost forced to use that overworked word so dear to the popular press "thrilling." Everyone held his breath as the little triangle of spots in the sky darted down to the water, taking shape as it came until the outlines of the supermarine were revealed to the eye. The piercing but not unmusical note of the racing Napier grew shriller and shriller until the whole atmosphere was full of its resonance. Suddenly, gracefully, easily, with perfect judgment, the seaplane flattened out over the buoy which marked the beginning of the 500 m., and flashed past



WHAT FLIGHT-LIEUT. D'ARCY GREIG'S SPEED REPRESENTS : On the left is shown a circle of 319·57 miles' radius, having London as its centre, which represents the area within reach of the S.5 in 1 hour's flying. On the right-hand map Geneva has been taken as the centre, and the area included represents the points that could have been reached in 2 hours' flying. It will be noted that quite a number of European capitals come with 2 hours' range of Geneva.

Calshot Castle some 200 ft. above the water. It was but a momentary vision, for at once it began to dwindle again to a group of three dots, which climbed once more to 1,300 ft. over Southampton. It was hard to keep the machine in sight as it banked and turned, but soon a trail of black smoke showed that D'Arcy Greig had commenced another of those amazing dives. An expert beside me exclaimed "If he can keep up that performance, the record is ours!" He felt sure that the speed was far higher than that shown in the race at Venice. But eyesight is very deceptive when one is trying to estimate tremendous speeds. No doubt the speed was higher than any seen at Venice, but it was not 323 m.p.h.

Six times did D'Arcy Greig flash along the course, and each time his dive was a sight to enjoy and to remember. There was, of course, no need for him to display consummate skill in cornering, as the Schneider pilots had to do, but in dealing with the job in hand his performance could not, I believe, have been bettered. When he had finished his sixth course he climbed, and threw his machine into a vertical bank over the top of Calshot Castle, just to give the spectators a little variety. Then he glided down and travelled for perhaps a couple of miles with his floats a few feet above the water before he settled down and stopped his engine. He was towed back, and was greeted on the slipway with loud applause. He said at once that he was not too optimistic over a record, though when asked what speed he had attained on the dives he said that he had not looked at the indicator.

The timekeepers, Mr. Reynolds and Col. Lindsay Lloyd, found that the best four laps were the second, third, fourth and fifth, and the times were :—

Second run.—519·230 k.p.h. = 322·630 m.p.h.
Third ,, —509·433 ,, = 316·540 ,,
Fourth ,, —514·285 ,, = 319·560 ,,
Fifth ,, —Same as fourth.

Average of the four runs : 514·308 k.p.h. = 319·570 m.p.h.

D'Arcy Greig had travelled faster than any human being has travelled before under official timing, but he had failed to exceed the Italian figures by the necessary 8 kms. per hour, and Bernardi's record therefore stands. It remains to be seen what the Air Ministry will decide to do about it. The business of the High Speed Flight is to develop high speed, and no doubt the flight will get on with its job. Other propellers may be tried out on the machines and the camera guns of the Royal Air Force may show that higher speeds than the figure attained last Sunday are within our power. But with the winter coming on apace, probably everyone will hope that no more official attacks on the record will be undertaken for the next four or five months.

Flight-Lieut. David D'Arcy Greig, D.F.C., was born on February 1, 1900, at Newspynil, Elgin, and was educated by a private tutor. He was a Cadet, R.A.F. (No. 1 Officers' Cadet Wing, St. Leonards) from February 6 to August 20, 1918—No. 1 Officers' Cadet Wing, St. Leonards, February 2; No. 1 School of Aeronautics, Reading, March 12; No. 190 Training Squadron, June 15; No. 191 Training Squadron, July 6.

On August 20, 1918, he was appointed 2nd Lieut., R.A.F., and was granted a Permanent Commission as Flying Officer on September 9, 1919, and Flight-Lieut. on January 1, 1927. He has been posted in the following squadrons, etc. :—83 Squadron, France, August 28, 1918; 191-192 Training Squadrons, October, 1918; No. 1 Stores Depot, November, 1918; 3 Boys' Training Centre, May, 1919; 6 Squadron, Iraq, March, 1920; Royal Air Force Base, Calshot (Air Pilotage Course), January, 1923; 24 Squadron (Flying duties), May, 1923; Flying Instruction Course, September, 1923; Posted to Central Flying School as Flying Instructor, June, 1924; Headquarters Fighting Area, May, 1927.

His war service dated from February 6, 1918, to November 11, 1918, and he served overseas during the war (28.8.18 to 8.10.18) in France, and in Iraq from February 13, 1920, to January 14, 1924. While with No. 83 Squadron on September 21, 1918, he was shot down on a F.E.2B, and walked back through the German lines, a distance of 13 miles. Made a parachute drop on April 22, 1927.

Honours Awards.—D.F.C. 28.10.21. For distinguished service in the field in Mesopotamia.

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A New Air Line to Prague

SPEAKING at a dinner of the Czech Society of Great Britain on November 6, Sir Samuel Hoare stated that a regular air service would, subject to the final arrangement of certain minor details, start next spring between London and Prague, enabling travellers to make the journey in about 8 hours.

Railways in the Air

BRITISH railways, it is reported, are considering an early application to Parliament for powers to operate air services. The general managers of the railway companies met at Euston on November 6 to consider the question. It is hinted that speedy developments may follow, and it has even been suggested that some of the big railway plants may be employed for producing aircraft.

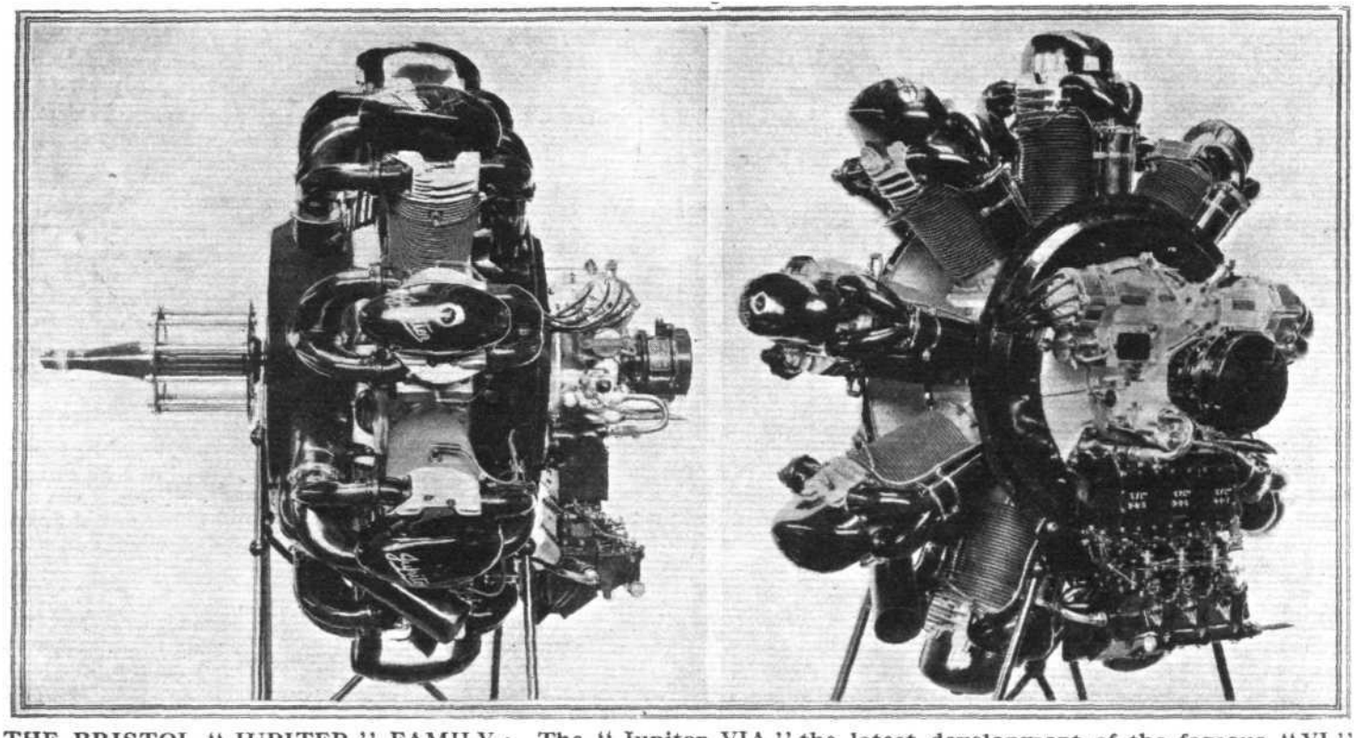
Manchester Municipal Aerodrome

ON November 6, official sanction was received from the Air Ministry for the establishment of an aerodrome for the Manchester district on Chat Moss. Manchester is thus the first city to have a municipal aerodrome. Others, please copy.

THE BRISTOL "JUPITER" FAMILY—(II)

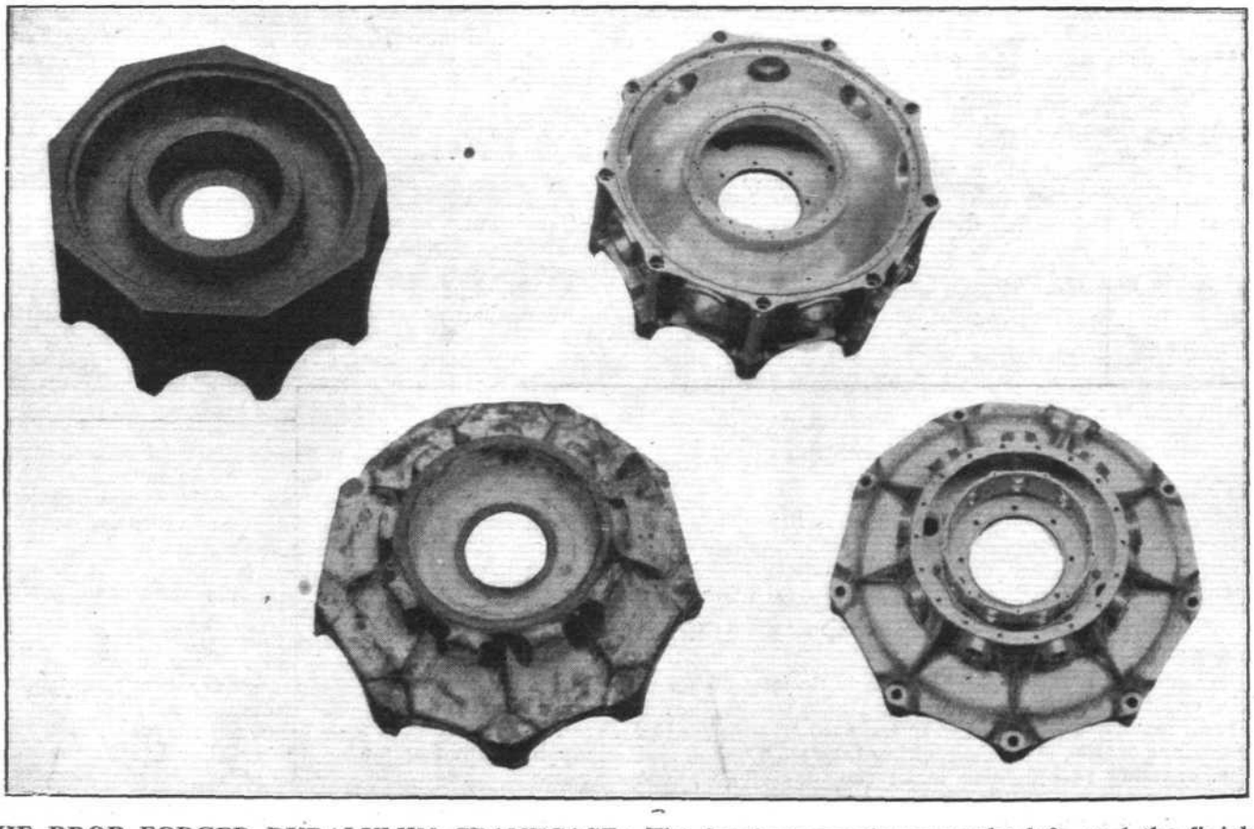
Some Features in their Design and Construction

IN our issue of May 24, 1928, we published an illustrated article giving the leading particulars, power curves, etc., of the Bristol "Jupiter" series of engines that have now been standardised. The "family," it may be recollected, now includes seven members: Three direct-drive types of various compression ratios, known as the VI A, VI A.M. and VI A.L., a supercharged type, known as the VII, and three geared types bearing the series numbers VIII, IX and XI, again according to compression ratio.

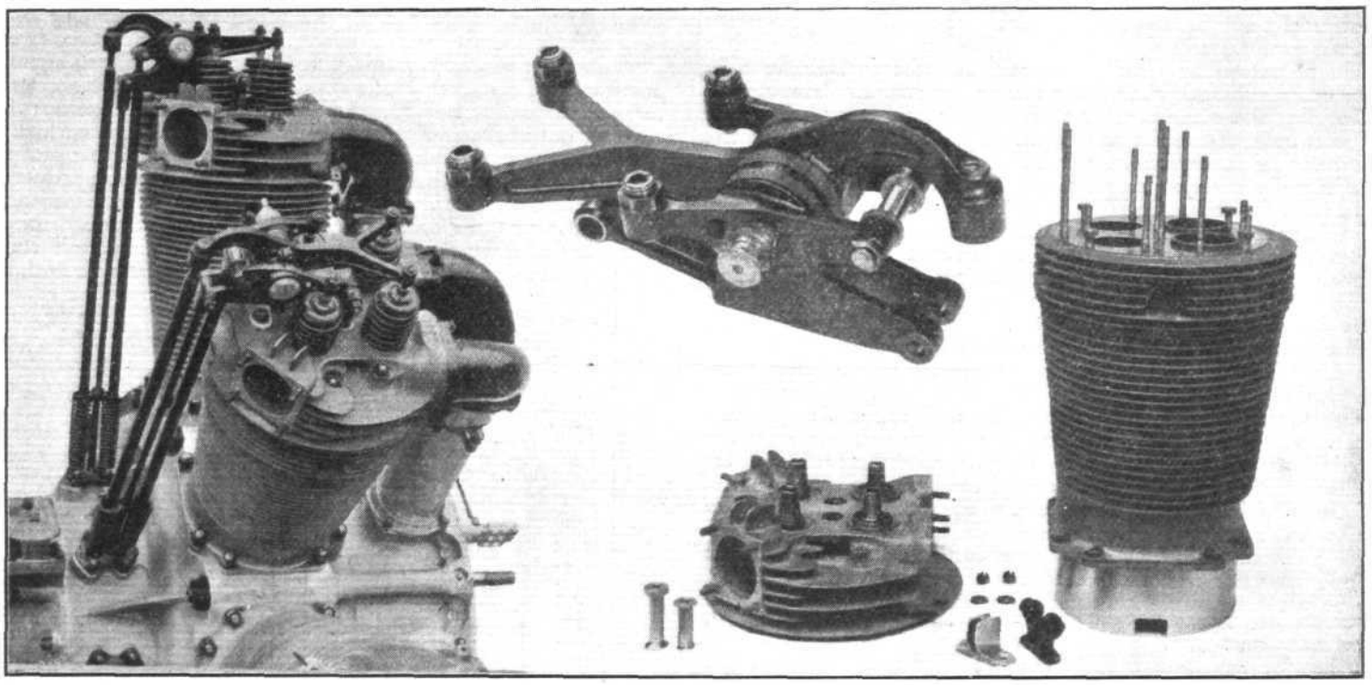


THE BRISTOL "JUPITER" FAMILY: The "Jupiter VIA" the latest development of the famous "VI" embodying several refinements.

In the main, this comprehensive series of engines are identical in their essential features, the variations being confined to such items as are directly influenced by the



THE DROP FORGED DURALUMIN CRANKCASE: The forgings are shown on the left, and the finished article on the right. The crankcase is machined all over and heat treated.



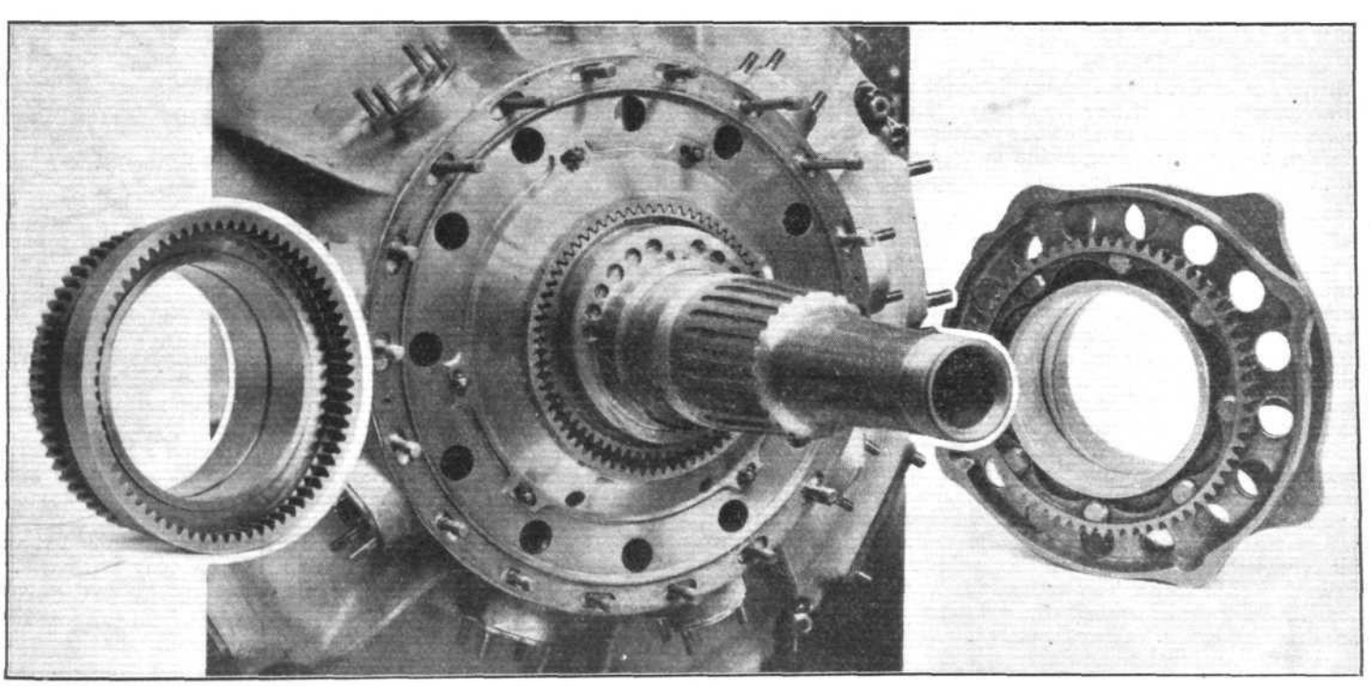
THE "JUPITER" VALVE ROCKER COMPENSATING GEAR: On the left a view of two cylinders in place. In the centre, the new ball-bearing rockers, and on the right a steel cylinder with its aluminium head detached.

presence or absence of gearing, supercharger, etc. In the following notes on some of the features in the design and construction of the "Jupiter" engines, unless otherwise stated, the description may therefore be taken to apply to all seven engines of the series.

Like the original "Jupiter IV," and still earlier engines, from which the modern series numbers VI A, VI A.M., VI A.L., VII, VIII, IX and XI have been developed, the present day "Jupiter" is a nine-cylinder radial air-cooled engine, with split crankcase and steel cylinders with aluminium alloy heads. In the older engines the crankshaft was in one piece, which necessitated a split big-end on the master connecting rod. Already in the first series VI engine a change was made to a two-piece crankshaft, thereby enabling the split big-end to be done away with and a one-piece floating bush to be used. This feature is retained in the whole series here under review, and all "Jupiters" have solid type master rod big-ends, with eight articulated rods.

Crankcase

The "Jupiter" crankcase is of the split type, the two halves meeting on the centre line of the cylinders, and making a faced joint. The crankcase is made up of Duralumin drop forgings, and is machined all over from the rough state, and then finished off by sand blasting. By using drop forgings instead of castings, the Bristol Company claim that a perfectly homogeneous crankcase is obtained, free from flaws and blow-holes, and which will not develop fatigue cracks after extended running. It is claimed that this type of crankcase is twice as strong for its weight as the more usual cast crankcase. The crankcase forgings are made in specially prepared dies, and subjected to approximately 250 blows from a 7-ton hammer, the effect being to ensure that the grain of the metal is in the right direction. One of our photographs shows the forgings of the two halves of the crankcase, as well as the finished machined and sandblasted article. In the rear half of the finished crankcase can be



THE BRISTOL "JUPITER" CAM GEAR: The cam sleeve, with the four inlet cam lobes at the front, is driven from the crankshaft by the "Bristol" patented eccentric epicyclic gearing at one-eighth engine speed.

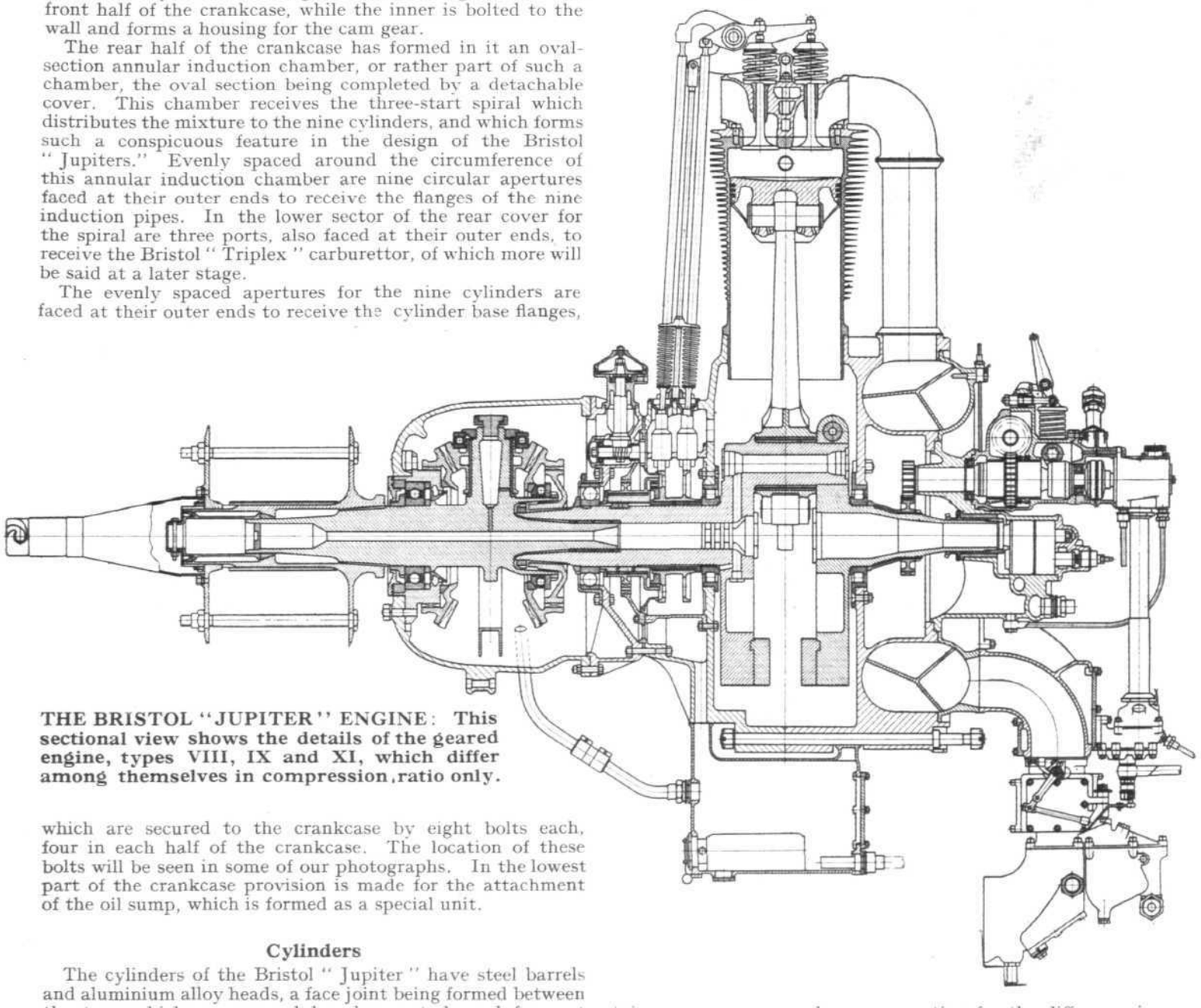
seen clearly the annular chamber which partly houses the induction spiral.

The two hrlves of the crankcase are secured by nine bolts which serve both to register and secure the joint and also to support the engine on its plate. Near their rear ends these bolts have collars formed on them, sunk into recesses in the crankcase, behind the face of which the ends of the bolts project sufficiently to pass through the corresponding holes in the engine plate.

The front half of the crankcase has two large concentric cylindrical projections growing forward from the front wall, and providing accommodation for the 18 tappet guides. The outer cylindrical casing is formed integral with the front half of the crankcase, while the inner is bolted to the wall and forms a housing for the cam gear.

The rear half of the crankcase has formed in it an oval-section annular induction chamber, or rather part of such a chamber, the oval section being completed by a detachable cover. This chamber receives the three-start spiral which distributes the mixture to the nine cylinders, and which forms such a conspicuous feature in the design of the Bristol "Jupiters." Evenly spaced around the circumference of this annular induction chamber are nine circular apertures faced at their outer ends to receive the flanges of the nine induction pipes. In the lower sector of the rear cover for the spiral are three ports, also faced at their outer ends, to receive the Bristol "Triplex" carburettor, of which more will be said at a later stage.

The evenly spaced apertures for the nine cylinders are faced at their outer ends to receive the cylinder base flanges, which are secured to the crankcase by eight bolts each, four in each half of the crankcase. The location of these bolts will be seen in some of our photographs. In the lowest part of the crankcase provision is made for the attachment of the oil sump, which is formed as a special unit.



THE BRISTOL "JUPITER" ENGINE: This sectional view shows the details of the geared engine, types VIII, IX and XI, which differ among themselves in compression ratio only.

Cylinders

The cylinders of the Bristol "Jupiter" have steel barrels and aluminium alloy heads, a face joint being formed between the two, which are secured by eleven studs and four set screws. The cylinder barrel is machined from a steel forging, and has its crown formed integral with the cylinder, so that the valves seat direct in the crown, and there are no separate valve seats to work loose. Also, of course, the integral crown takes the explosion pressures.

The cooling fins, turned from the solid, are carefully proportioned to give even cooling, and it is of interest to note that they are formed eccentrically with reference to the cylinder barrel, being deeper at the back of the cylinder, where the cooling is likely to be less effective. To give an idea of the care taken in the production of "Jupiter" cylinders it may be stated that the average weight of the steel forging from which the cylinder barrel is turned is 88 lbs., of which approximately 70 lbs. is machined off, leaving the finished weight about 18 lbs.

A short distance below the bottom fin the cylinder barrel has formed on it the base flange by which the cylinder is attached to the crankcase. The flange has two bolt holes at each of its four corners for the reception of the holding-down studs, of which, as previously mentioned, four are situtated in the front half of the crankcase and four in the rear half.

The cylinder head, of aluminium alloy, contains the valve ports, and carries the valve mechanism, the topmost fin forming a bridge or platform which not only stiffens the casting, but also supports the valve guides and valve springs. Around the exhaust ports the cylinder head casting is generously finned to assist in dissipating the greater heat attained in this locality, and distance pieces of "Invar," a material the coefficient of expansion of which is negligible, are interposed between the nuts of the securing studs around the exhaust ports and the metal of the casting in order to maintain an even pressure by compensating for the difference in expansion of the aluminium head and the steel studs.

In the case of the inlet valve ports, shallow recesses are cut in the steel crown and the head casting, to receive phosphor-bronze spigot rings, which serve to locate the head, and also to seal the inlet port joint.

On each side of the cylinder head is formed a tapped boss for the reception of the sparking plugs, while a similar but smaller boss on the front of the cylinder head accommodates the non-return valve of the gas starter system.

The gas passages for the four valves are so arranged that those for the inlet valves (at the back) face aft, with their axes parallel wth the line of flight, while the exhaust valve passages are at right angles with each other, *i.e.*, at an angle of 45° to the centre-line of the crankshaft.

Valves and Valve Gear

The exhaust and inlet valves of the Bristol "Jupiter" are dissimilar, not only in their material specification, but also in external dimensions, the exhaust valve head being smaller than the inlet valve head, while the exhaust valve

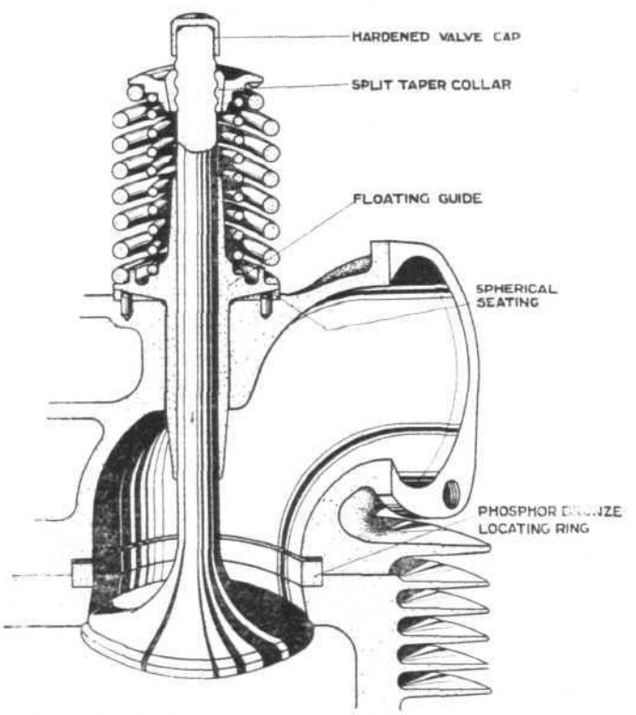
FLIGHT
AIRCRAFT ENGINEER

seat is cut at an angle of 45° and the inlet valve seat at 30°.

Two concentric springs are fitted to each valve, and the valve spring washers are secured to the valve stem by means of split taper collars having rounded section grooves engaging with similar grooves turned on the valve stems. The split collars are tapered, and fit into taper seats in the valve spring washers, as shown in one of our sketches. In the case of the exhaust valves, protective steel washers are interposed between the valve springs and the aluminium head, but for the inlet valves the protection is afforded by the flange on the floating phosphor-bronze valve guide.

The arrangement of the inlet valve guide is interesting. The guide is of the " floating " type in that it is a loose fit in its boss on the cylinder head, and thus free to tilt, within limits, on the spherical surface of its seating, thereby permitting the valve to align itself on its seating in spite of any distortion that may take place. An additional advantage of this arrangement is that replacements are very easily made the guide being dropped into position.

The guide for the exhaust valve is tapered, and fits tightly inside the boss reamered for it in the aluminium head. The guide is shrunk into position by heating the cylinder head and inserting the cold guide in it.

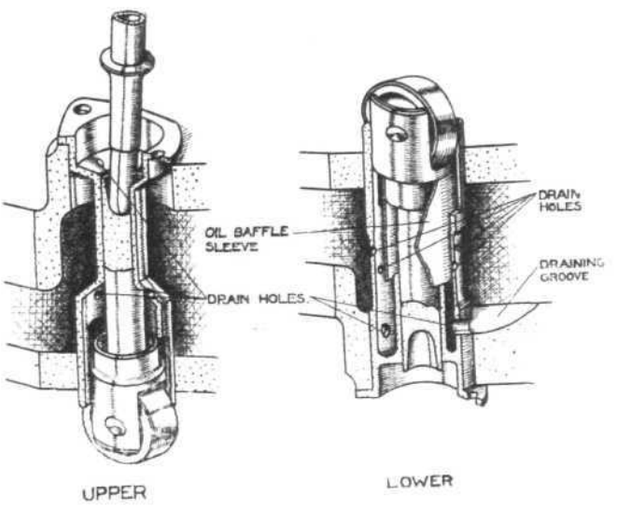


"JUPITER" VALVE ASSEMBLY: Floating valve stem guides supported on a spherical seating are a feature of " Bristol " inlet valves. Thus the valve can seat itself freely in spite of any distortion.

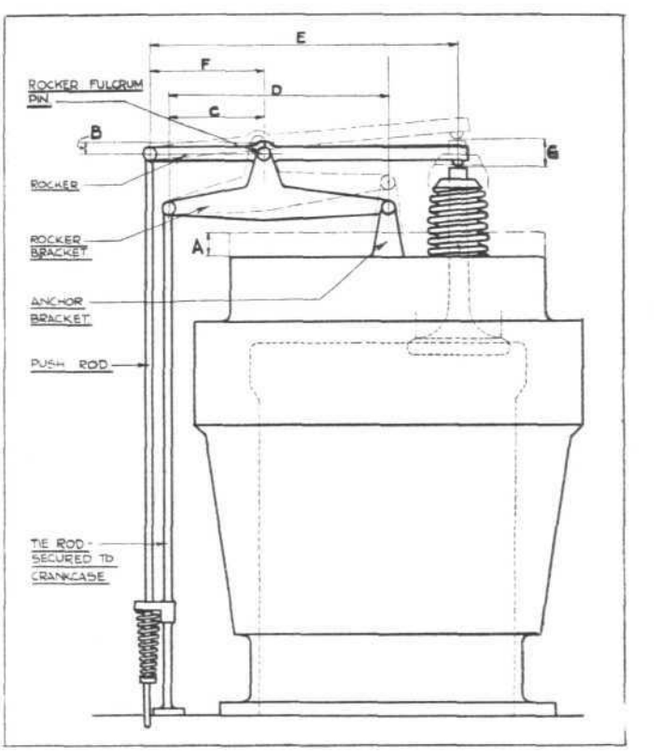
The inlet and exhaust valves are operated, via push rods and rockers, by a cam sleeve having four inlet cam lobes at its front end and four exhaust cam lobes at its rear end. The cam sleeve is driven at one-eighth engine speed by a special patented epicyclic gear, some of the details of which are shown by photographs. This figure of one-eighth is not, strictly speaking, correct, as in reality the relative speed is such that the cam sleeve is $1\frac{1}{8}$ that of the crankshaft, the latter making one revolution forward while the cam sleeve makes one-eighth of a revolution backwards. The gearing securing this ratio is in the form of a compound train of epicyclic gears. The whole assembly is mounted on the crankshaft and crank-case, just ahead of the front wall of the latter, and enclosed in the inner cylindrical projection from it to which reference was made above.

The push rods are tubular, and at their inner ends are provided with special end pieces hardened to prevent wear, and shaped or " ball-ended " to allow the rods to take up their correct alignment by adjusting themselves in the cup-shaped top of the tappet. Each push rod is provided with an external spring, resting at its inner end on a flange or shoulder on the push rod, and constrained at its outer end by the forked arm of a yoke on the tie rod of the valve-clearance compensating gear (of which more later). These springs serve as auxiliary valve springs, and take care of the inertia forces on the push rods, relieving the actual valve springs of this work.

The tappets are of case-hardened steel, and carry at their inner ends hardened rollers running on hardened pins, the pin being a floating fit in both roller and tappet, and prevented from moving endwise by the walls of the tappet guides. The guides themselves are of Duralumin, and thus give a not inconsiderable saving in weight. Two of our sketches show typical valve tappets and guides, and illustrate the slight differences between the tappets of upper and lower cylinders, necessitated by the need for special oil baffles for



" Jupiter " tappet assembly.



THE BRISTOL TAPPET CLEARANCE COMPENSATING GEAR: In this diagram, which illustrates the action of the gear, A represents the radial expansion of the cylinder. B is the rise of rocker fulcrum pin, and is equal to C/D times A, or actually about 0·44 A. G is the rise of the valve end of the rocker, and is E/F times B. In the case of the inlet rocker, G = 2·58 × 0·44 A = 1·13 A, while for the exhaust rocker G = 2 × 0·44A = 0·88A. Therefore, as the engine warms up, the inlet clearance increases and the exhaust clearance decreases. The actual clearances cold are: inlet 0·004 inch; exhaust 0·016 inch. Average clearances hot: inlet 0·010; exhaust 0·010.

the lower tappets, to prevent oil leakage from the tappet guides pointing downwards.

At their outer ends, the push rods of inlet and exhaust valves differ, due to the fact that there are two exhaust rocker arms and but one inlet rocker arm. The exhaust-valve push rod has at its outer end a " T " piece, drilled transversely for the reception of the short bolt which transmits the thrust of the push rod to the two exhaust rocker arms. The inlet-valve push rod, on the other hand, terminates in a special hardened cup-shaped end piece, into which the special ball-ended rocker adjusting screw is received.

Since April of this year the Bristol Company has standardised a new type of valve rocker gear, in which ball bearings have been substituted for the plain bearings previously used. This has resulted in greatly reduced wear, and has enabled grease to be used instead of oil for lubricating the rockers, thus giving a much cleaner mechanism and approximately ten times as long between lubricating periods.

The Valve Clearance Compensating Gear

While on the subject of the overhead-valve mechanism of the Bristol " Jupiters," mention must be made of the special valve clearance compensating gear which is such an essential feature of the engine. In order to compensate for the effects of cylinder expansion, which normally would result in considerable changes in valve clearances as between the cold and hot state of the cylinders, a special system of levers has been incorporated, which has the effect of maintaining the clearances, or rather, of slightly increasing the inlet clearance with increase in temperature, and decreasing the exhaust clearance. The system of levers which ensures this includes a rocker bracket hinged at its inner end to a bracket situated approximately in the centre of the cylinder head. This rocker bracket carries a fulcrum pin on which the concentrically mounted inlet and exhaust valve rockers pivot. The other end of the rocker bracket has hinged to it a tie rod which is anchored at its lower end to the crankcase. When the cylinder expands, the top of the cylinder head moves outward from the engine centre. The tie rod, anchored to the crankcase, does not expand, or at least not to any appreciable extent, and the tie-rod end of the rocker bracket does not, therefore, change its position. The cylinder end of the rocker bracket, however, obviously must move out with the cylinder head on which it is mounted, and in so doing it slightly changes the position of the fulcrum pin. Owing to the differences in length of the push-rod arm and valve-stem arm of the valve rocker, the desired compensating effect is obtained. A reference to the diagram illustrating this effect will make the action clear. There is little doubt that this feature in the " Jupiter " design has contributed materially to the satisfactory running of the engine under the most extreme conditions of temperature, from tropical to arctic.

(*To be continued.*)

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

ASSOCIATED CLUBS GENERAL COUNCIL

THE General Council met at the Royal Aero Club on Friday, November 2, 1928, at 11 a.m., Lord Thomson (Chairman of the Royal Aero Club) presiding.

The following clubs were represented :—

Royal Aero Club.—Lieut.-Col. M. O. Darby, O.B.E., Mr. F. Handley Page, C.B.E., Lieut.-Col. M. O'Gorman, C.B., Major H. A. Petre, D.S.O., M.C., Colonel The Master of Sempill, A.F.C.

Bristol and Wessex A.C.—Mr. A. H. Downes-Shaw, Colonel D. C. Robinson, Major G. S. Cooper.

Felixstowe Light A.C.—Flight-Lieut. N. Comper.

Halton A.C.—Flying Officer Cecil H. L. Needham, B.Sc.

Hampshire A.C.—Mr. O. E. Simmonds, Mr. H. J. Harrington.

Lancashire A.C.—Mr. A. R. Goodfellow, Mr. J. C. Cantrill.

Liverpool and District A.C.—Mr. W. Frank Davison.

London A.C.—Major K. M. Beaumont, D.S.O., Captain A. G. Lamplugh, Major R. H. Mayo, O.B.E.

Midland A.C.—Major Gilbert Dennison, Mr. H. A. Pepper.

Newcastle-upon-Tyne A.C.—Major B. M. Dodds.

Norfolk and Norwich A.C.—Captain R. T. Harmer, Mr. G. F. Surtees, Mr. B. L. Young.

Nottingham A.C.—Mr. C. R. Sands.

Royal Aircraft Establishment A.C.—Mr. P. N. G. Peters.

Suffolk and Eastern Counties A.C.—Dr. James C. Sleigh.

Yorkshire A.C.—Flying Officer F. G. Wayman, Colonel J. Walker.

Official Meeting, 1928.—The accounts for the four official meetings held in 1928 were presented, and it was decided that the amount standing to the credit of the pool should be distributed equally amongst the Associated Light Aeroplane Clubs.

A unanimous vote of thanks was passed to the following clubs, who organised the official meetings in 1928 :—The Bristol and Wessex A.C., The Hampshire A.C., The Lancashire A.C., The Midland A.C.

Official Meetings, 1929.—The programme for 1929 was considered, and it was thought desirable to concentrate on one large official meeting in the provinces, at which it was hoped to obtain full support from the R.A.F. It was further decided to hold three smaller meetings at which R.A.F. support would be asked for on a lesser scale. The location for these meetings was left over till the next conference of the General Council.

Insurance.—Mr. E. J. Quarrington, the Honorary Insurance Adviser to the General Council, submitted a report giving statistics of insurances taken out by Light Aeroplane Clubs for the year ended July 31, 1928. It was decided that this report should be issued to all the associated clubs.

Establishment of Light Aeroplane Clubs and Aerodromes.—The General Council considered fully the proposal put forward by the promoters of a company to be formed to establish light aeroplane clubs and aerodromes in various parts of the country.

Offices : THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W.1.
H. E. PERRIN, Secretary.

Royal Aero Club Monthly House Dinner

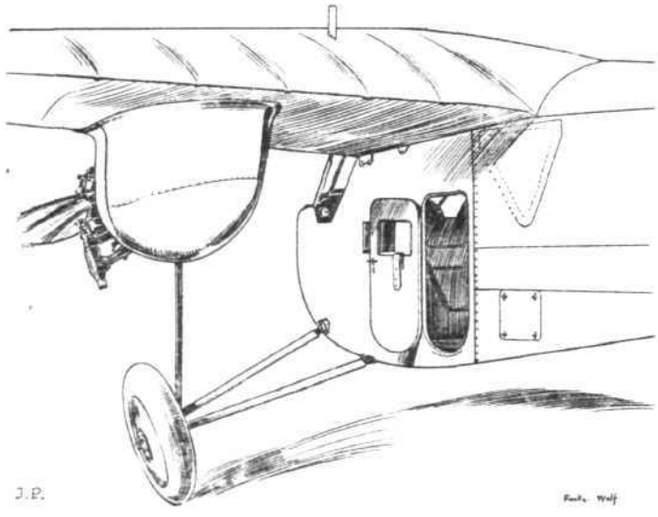
THE Royal Aero Club will hold its first Monthly House Dinner of the season on Wednesday, November 14, at 7.30 p.m., when it will welcome home Mr. Bert Hinkler from Australia. Mr. Hinkler will recount his experiences on his flight from England to Australia, and will speak on Aviation in Australia. Members wishing to attend are requested to notify the Secretary soon, as the number is limited to 60.

" Aero Engines in Flight "

ON Thursday, November 15, Mr. R. J. Penn will lecture before the Royal Aeronautical Society in the lecture hall of the Royal Society of Arts, 18, John Street, Adelphi. W.C.2, at 7.45 p.m. The subject of his lecture will be " Aero Engines in Flight," with particular reference to carburation. The meeting will be a joint one with the Instltution of Automobile Engineers. Mr. Penn is well-known as the technical officer in charge of the Flying Section, the Engine Research Flight, at the Royal Aircraft Establishment, a post he has held since 1922. He has been closely connected with the testing, developing and research work on aero engines and power plants, as well as all the subsidiary work in connection with aircraft engine development. Mr. Penn is a member of both the Aeroplane and Engine Sub-Committees of the Airworthiness Committee. Will members and others who wish to attend the lecture please note the time, 7.45 p.m. Refreshments will be served in the library of the Royal Society of Arts at 7.15 p.m.

(*Concluded from page 954*)

THE following concluding notes on the Berlin Aero Show deal with machines which were not, strictly speaking, commercial aircraft, and which were certainly not light 'planes, but which



["FLIGHT" *Sketch*

On the twin-engined Focke-Wulf machine the telescopic struts of the undercarriage are taken to the engine mountings on the wing.

failed to fall into any group of the arbitrary classification of the machines which we used in describing the aircraft exhibited at the I.L.A.

The Focke-Wulf G.L. 22

Designed primarily as a training machine for commercial pilots in preparation for the piloting of large commercial multi-engined aircraft, the type G.L. 22 exhibited by the Focke-Wulf firm of Bremen was a small twin-engined monoplane with two Siemens S.H. 12 engines of 100 h.p. each. The machine was of typical Focke-Wulf design and construction, except for the twin-engined arrangement of the power plant, which did not necessitate any very drastic changes in design.

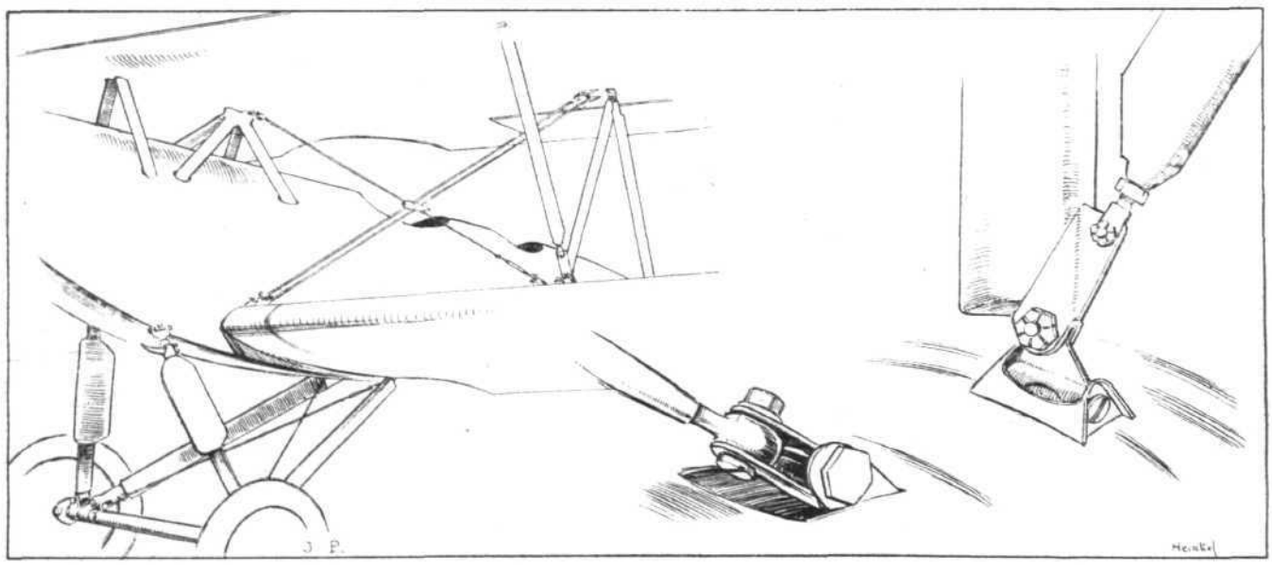
The G.L. 22 might quite well be used as a small commercial machine on "feeder lines," or where the amount of traffic is not great. The cabin, although in the training machine it was not equipped as it would be in a passenger carrier, would readily seat at least four passengers, and its dimensions were such that as a goods carrier also, the G.L. 22 would be sufficiently roomy.

As exhibited, the idea was to enable extended training and practice flights to be made, the instructor(s) changing seats with the pupil(s) during flight.

The monoplane wing was of usual Focke-Wulf type, with a single box spar stiffened in torsion by a three-ply covered leading edge. The rear wing portion was fabric covered. The fuselage was a wood girder, fabric covered at the back, but the cabin portion was double plywood covered.

The two Siemens S.H. 12 engines were mounted one on each side under the wing, supplied with petrol from tanks in the leading edge. The undercarriage was of very wide track, and had the telescopic legs running to the wing engine mountings, as shown in one of our sketches.

The main characteristics of the Focke-Wulf G.L. 22 were: Length, overall, 11 m. (36·1 ft.); wing span, 16 m. (52·5 ft.). Wing area, 34·5 sq. m. (371 sq. ft.). Tare weight, 1,130 kg. (2,485 lbs.); permissible load, 490 kg. (1,078 lbs.). Gross weight, 1,620 kg. (3,563 lbs.). Wing loading, 52·5 kg./m.^{2};



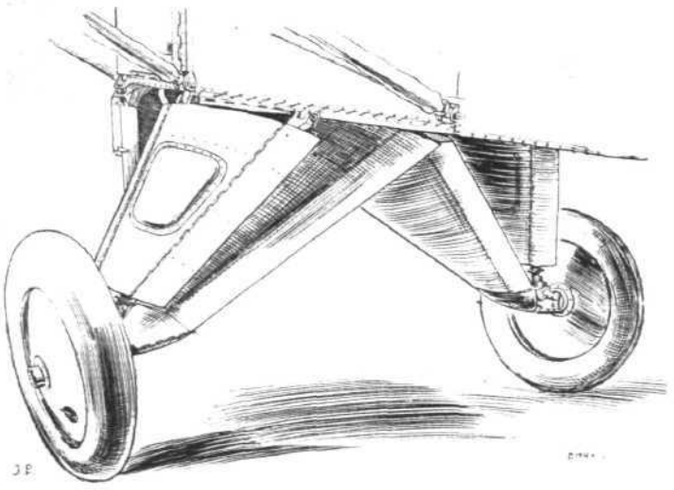
["FLIGHT" *Sketches*

THE HEINKEL BIPLANE: On the left a general view of undercarriage, wing bracing, etc. The details on the right show attachment of inter-plane strut and anti-lift wires to lower wing spar.

(9·6 lbs./sq. ft.). Power loading (on 200 h.p.) 17·8 lbs./h.p. Maximum speed, 156 km./hr. (97 m.p.h.); landing speed, 80 km./hr. (50 m.p.h.). Climb to 1,000 m. (3,280 ft.) in 9 mins. Ceiling, 3,500 m. (11,480 ft.). Range, 900 km. (560 miles).

The Heinkel Machines

Of the two machines exhibited by the Heinkel aircraft works of Warnemünde, the seaplane was, perhaps, the more interesting, as it represented Dr. Heinkel's solution of a long-distance machine intended for transoceanic flights. The H.E. 10 was, in fact, the type with which an unsuccessful attempt was made last summer to fly from Germany to America, *via* the Azores. In our issue of October 11 we published a photograph of the Heinkel stand, and to this photograph we would refer readers for an illustration of the Heinkel H.E. 10 seaplane.



["FLIGHT" *Sketch*]

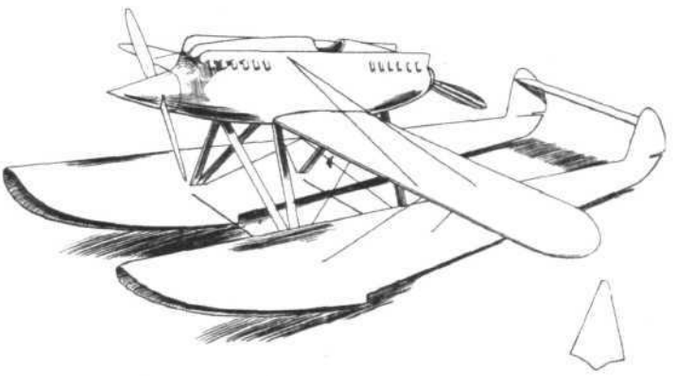
ITALIAN "TROUSER FASHIONS": On the Breda monoplane the undercarriage was liberally streamlined, the fairings enclosing bent axles, radius rods and telescopic members. It seems likely that the interference drag between such large surfaces meeting at small angles is much greater than would be the case if normal thin streamline struts had been used.

The H.E. 10 is a typical Heinkel machine in that it is a low-wing monoplane, with the wings braced by struts to the two floats. But little change has been made in the fuselage design to adapt the machine to long-distance work. The addition of a sort of "conservatory" roof over the cockpits is the most notable alteration. Otherwise the machine is of perfectly normal—some might even say old-fashioned—Heinkel design. It seems likely that the machine is very efficient aerodynamically, the wings being of fairly large span and the fuselage of relatively small cross-sectional area, and of fairly good form. The H.E. 10 is, in fact, a logical development on a larger scale of the types of Heinkel monoplanes produced by this German designer, both by his present firm and previously by the Hansa-Brandenburg Company.

The H.E. 10 is of mixed construction, in that its fuselage is a welded steel tube structure in which no wires are employed, while the monoplane wing is of wood construction. The wing has two box spars of normal type, with spruce flanges and three-ply webs. The leading edge is plywood-covered, as is also the lower surface from strut attachments to fuselage. The latter is necessitated by the presence of fuel tanks in the wings.

In the forward part of the fuselage the engine mounting is built in as a self-contained unit. Behind the fireproof bulkhead is the "cabin," in which the seats (normally three, but with a possible fourth) are arranged one behind the other along the port side. The machine can be turned into a four-seater, in which case the extra seat is to the right of the last of the regular seats.

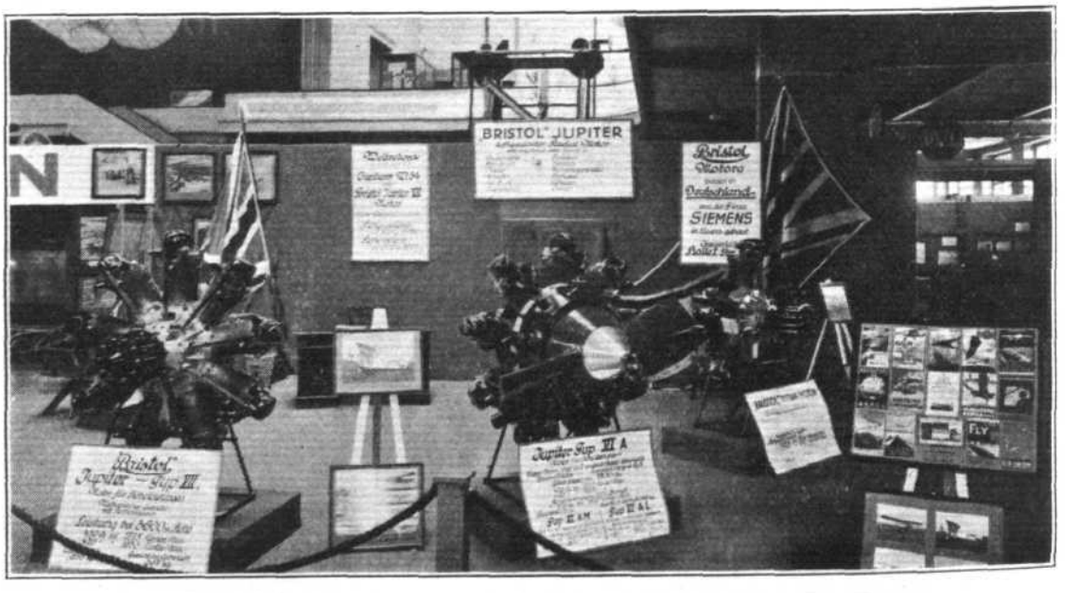
The engine is a B.M.W. VI with propeller reduction gear, and as the petrol tanks are mounted in the wing, engine-driven petrol pumps are used for forcing the fuel to the service tank.



A German Schneider Trophy Challenger? This sketch shows a model exhibited by Dornier, and representing a design for a racing seaplane. The two engines are intended to be of 1,000 h.p. each, and the long floats, of unusual cross-section, extend aft to carry the tail. The inset shows the section of the floats in the neighbourhood of the single step.

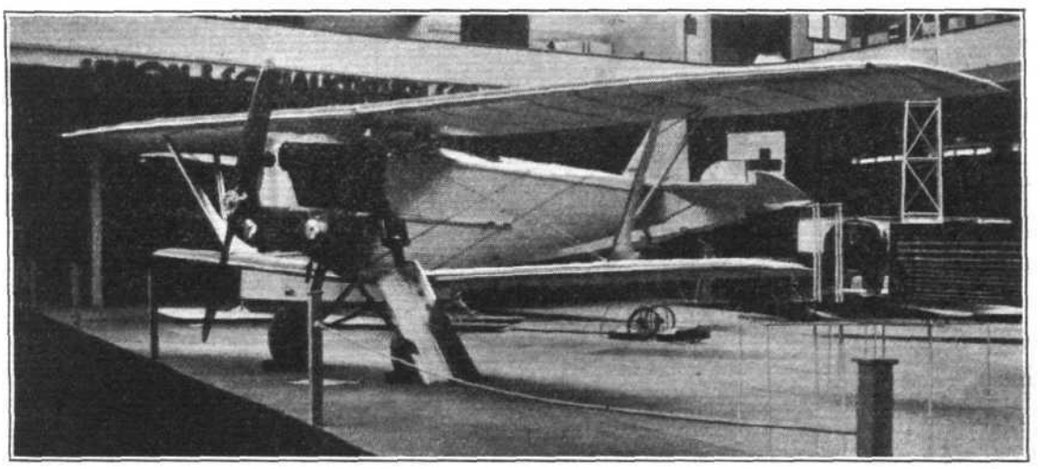
The floats are of wood construction, with a single step. The step itself is perfectly flat, but the bottom aft of the step gradually changes into a vee, and then narrows to a point on the heel of the float. Horizontal struts join the floats, and the supporting struts form a letter "M" as seen from in front. From the outer and lower ends of the limbs of the "M" struts run to the wings.

The main characteristics of the Heinkel H.E.10 are: Length o.a., 13·10 m. (43 ft.); wing span, 18·40 m. (60·3 ft.); wing area, 60·93 sq. m. (656 sq. ft.). Tare weight, 2,490 kg. (5,475 lbs.); permissible load, 2,320 kg. (5,100 lbs.); total loaded weight, 4,810 kg. (10,575 lbs.). The machine being



"Bristols" at Berlin: Placed somewhat in the shadow of the D.V.L., the Bristol stand nevertheless attracted a number of discriminating visitors. The new "show finish" of the engines was greatly admired.

FLIGHT
AIRCRAFT ENGINEER AIRSHIPS



A Russian Mail 'Plane: The A.N.T.3 sesquiplane is of all-metal construction, and bears strong evidence of German (Junkers) influence with its corrugated Duralumin covering. The fuselage is of approximately triangular cross-section.

designed for long-distance flights, the normal load of 5,100 lbs. is made up as follows: Crew of four, 320 kg. (700 lbs.); petrol and oil for 15 hours at "normal" throttle, 1,800 kg. (3,960 lbs.); equipment, 50 kg. (110 lbs.); instruments, etc., 150 kg. (330 lbs.). Maximum speed near sea level, 185 km./h. (115 m.p.h.). Climb to 1,000 m. (3,280 ft.) in 12 mins.

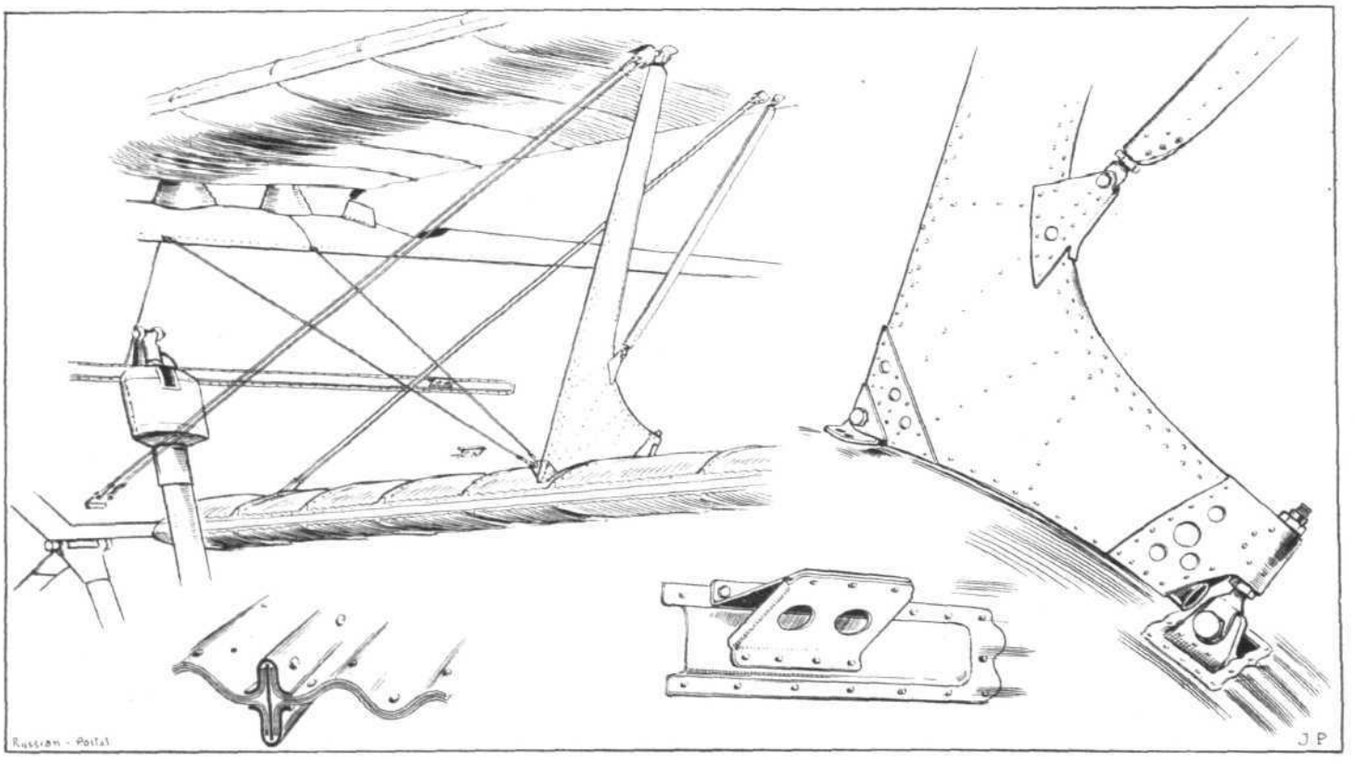
The second machine exhibited on the Heinkel stand was described as a "sport-, travel and courier" machine. It was a heavily staggered biplane, with the works denomination H.D.22. The type is not new, having made its appearance in 1926, and has been sold in fairly large numbers, among those having used it being Major Reinburg of the American Embassy in Berlin.

The machine shown at the I.L.A. was fitted with one of the Junkers L.5. engines rated at 300 h.p. The fuselage of the H.D.22 is of welded steel tube construction, while the wings are of two-spar wood construction, with the lower surface covered with plywood and the upper with fabric. The petrol tanks, with a capacity of 400 litres (88 gallons), are housed in the top plane, giving direct gravity feed.

The main dimensions, weights, etc. of the H.D.22 are: Length o.a., 8·3 m. (27·25 ft.); span upper, 12 m. (39·4 ft.); span lower, 10·4 m. (33·9 ft.); wing area, 34·8 sq. m. (375 sq. ft.). Tare weight, according to engine fitted, 1,000 kg. to 1,200 kg. (2,200 lbs. to 2,640 lbs.). Permissible load, 500 kg. (1,100 lbs.). Gross weight: up to 1,700 kg. (3,740 lbs.). Performance figures are not available for the machine as fitted with the Junkers L.5 engine, but with the B.M.W. IV, the top speed is 189 km./h. (117·5 m.p.h.), and the ceiling 5,150 m. (16,900 ft.).

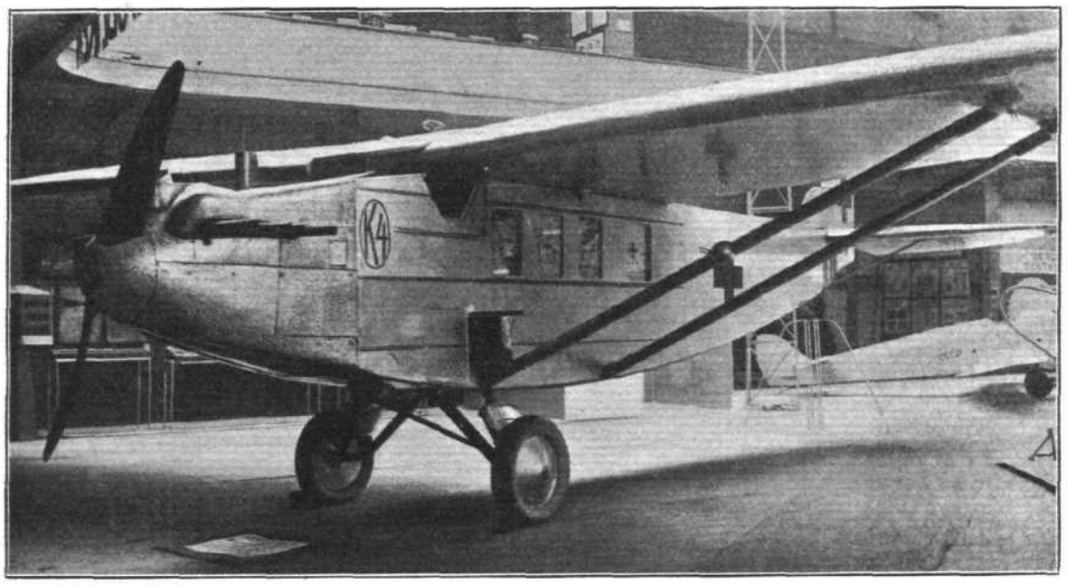
The Italian Machines

Not one of the machines exhibited by Italy could fairly be described as a commercial type, and we do not, therefore, propose to devote space to a description of them. All and sundry, with the exception of the Macchi racer, had ominous swellings around the rear cockpit, swellings which are perfectly respectable in a service machine, but simply "not done" in a commercial or sporting type of aircraft. How these types managed to "get by" the exhibition authorities is still something of a mystery, especially in view of the fact that difficulties were raised about exhibiting even photographs of military aircraft.



["FLIGHT" *Sketches*

RUSSIAN METAL CONSTRUCTION AT THE BERLIN SHOW: The mail 'plane A.N.T.3 was built entirely of Duralumin. The larger sketch shows the wing bracing, while insets illustrate details of the wing strut attachment with incidence adjustment, the step on the side of the fuselage, and the method of finishing off the trailing edge of the metal wing covering.



The Russian ambulance machine, type K.4, is mainly of metal construction. The two side radiators are retractable.

Two Russian Machines

Of the two larger Russian machines exhibited at the Berlin Show, one was a mail 'plane while the other was an ambulance machine. Both were to a large extent of metal construction, but little could be seen of the detail, and no information was available on the stand during our visit beyond some very brief data printed on placards exhibited on the stand.

The Rusian mail 'plane was a machine of rather pleasing appearance, and the workmanship and finish were very good. In the design of the A.N.T.3, as this machine was styled, there were traces of both German and French influence, and one received the impression that the designers of the A.N.T.3 had examined carefully a number of French and German aeroplanes of various types, and had then incorporated in their design such features as appeared to them to be worth developing. The result was, if one may judge from outward appearances, rather successful, and the machine did not suffer by comparison with aircraft produced by nations with many years' experience in aircraft design and construction. In the A.N.T.3, French influence was traceable in the general design, with the wings arranged *en sesquiplan*, while German influence was mostly to be found in the constructional features, which were rather reminiscent of Junkers' practice.

The A.N.T.3 was described as a mail 'plane, and the small cross-sectional area of the fuselage would probably result in the internal space being rather restricted. However, the space behind the pilot's cockpit, which had a sort of screw-down " lid " over it, presumably for the mail compartment, might be converted to take a gun, although the swelling found on all the Italian " commercial " machines was certainly absent. The fuselage, incidentally, was of triangular section, with the two longerons at the top and a single longeron at the bottom. The sides, however, were slightly curved, and covered with corrugated Duralumin sheet, after the Junkers fashion. The engine, a 12-cylinder water-cooled Vee, was described as a 400 h.p. " Aviatrust," but looked uncommonly like a good old " Liberty." Cooling was by two Lamblin radiators of the " lobster pot " type, mounted one on each side of the engine, near the bottom of the fuselage.

The sesquiplane wings were of all-metal construction, the covering being corrugated Duralumin. The two halves of the top plane were bolted to short streamline stubs rising from the fuselage deck, while the lower wing halves were bolted to the single lower longeron. The interplane struts were of " L "-shape, with a light strut running from the curve of the foot of the " L " to the top rear spar, as shown in one of our sketches.

The undercarriage was of the " split " type, without axle and the telescopic legs were attached at their upper ends to the fireproof bulkhead behind the engine.

The following particulars of the machine were given on a placard : Tare weight 1,350 kg. (2,970 lbs.) ; permissible load, 750 kg. (1,650 lbs.) ; gross weight, 2,100 kg. (4,620 lbs.) ; maximum speed, 210 km./h. (130 m.p.h.) ; landing speed, 90 km./h. (56 m.p.h.) ; climb to 1,000 m. (3,280 ft.), in 3·5 mins. ; to 3,000 m. (9,840 ft.) in 15 mins.

The Russian ambulance 'plane, type K.4, was a high-wing, strut-braced monoplane, apparently of mixed construction, as although the fuselage was a tubular structure, the wing was fabric covered and apparently of wood construction as regards its main structure.

The internal arrangement of the fuselage was such as to permit of a stretcher case being accommodated, with a doctor or nurse in attendance. The engine fitted was described as a 300 h.p. M.6, but had all the appearances of being a Hispano.

The particulars of the K.4 given on a placard were : Tare weight, 1,420 kg. (3,125 lbs.) ; ambulance load, 640 kg. (1,410 lbs.) ; Maximum permissible load, 1,000 kg. (2,200 lbs.) ; gross weight (maximum), 2,420 kg. (5,325 lbs.) ; maximum speed, 185 km./h. (115 m.p.h.) ; cruising speed, 160 km/h. (100 m.p.h.) ; landing speed, 70-75 km./h (44–51 m.p.h.) ; climb to 1,000 m. (3,280 ft.), in 5·5 mins. ; to 3,000 m. (9,840 ft.) in 21 mins.

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THE ZEPPELIN'S RETURN

AFTER having been reported over the Bay of Biscay on the morning of October 31 (as recorded in our last issue) the " Graf Zeppelin " made the following progress in the final stages of the return flight from Lakehurst, N.J. At 3.30 p.m. (October 31) she was seen over the north part of the Bay, some 150 miles from the French coast. Passed over Nantes at 6.45 p.m. Over Tours at 8.20 p.m. Passed 60 miles E.S.E. of Paris at 10 p.m. At about 11.30 p.m. she signalled that owing to bad weather, a course was being set for Basel, and at midnight the airship was reported over Dijon. When over Basel at 3.45 a.m. on November 1, a message was sent out to Friedrichshafen announcing its approach, and an hour later, the " Graf Zeppelin " arrived over the landing ground. It was not until 7.15 a.m., however, that the airship was safely landed, the huge crowd gathered on the ground simultaneously, singing " Deutschland über Alles " as she did so. As might be expected, there were scenes of considerable enthusiasm—especially concerning the boy stowaway Clarence Terhune. The return journey took just over 71 hrs. Dr. Eckener later stated the return trip was far more difficult than the outward one ; they encountered a violent storm and fog over Newfoundland. He added that while he considered airship travel across the Atlantic would become regular in time, they would require bigger and more powerful airships. In the evening, a banquet was given in honour of the officers and crew of the " Graf Zeppelin," and a telegram of congratulation was sent to Dr. Eckener by President von Hindenburg.

On November 5, the airship flew from Friedrichshafen to Berlin, and later was—with some difficulty—moored to the mast at Staaken. After speeches of welcome, Dr. Eckener and some of the officers were driven through large and cheering crowds to Berlin, where they were received at the President's Palace by Field-Marshal von Hindenburg. On November 6, the " Graf Zeppelin " returned to Friedrichshafen, visiting several towns en route.

FLIGHT

PRIVATE  FLYING

A Section of FLIGHT in the Interests of the Private Owner, Owner-Pilot, and Club Member

THE FLYING CLUB MOVEMENT IN IRELAND

IN our issue for October 18 last we referred, in this section of FLIGHT, to the proposed formation of a light aeroplane club in Belfast, from which it appeared that the Flying Club movement was likely to make a start in Northern Ireland. This week, we are able to follow up with some notes on the progress that is being made in the Irish Free State.

Ireland, we think, presents possibilities as regards aviation, both in the Northern territory and the Free State. Especially in the latter, which is, so to speak, a "new country" anxious to develop; and, surely, aviation could help quite considerably in this development in a number of ways. Transport—internal and external—and survey are just two of them that come to mind.

Therefore, it is only necessary to create the "air mind" in the Emerald Isle, and aviation will certainly find a place in that country's commercial and social development—at least, so we consider. It is thus of interest to note that on October 29 a special general meeting was held in the Shelbourne Hotel, Dublin, in connection with the Irish Aero Club—at which Mr. M. P. Rowan, Chairman, presided—to consider the recommendation of the Provisional Committee to have the club incorporated as a company limited by guarantee, and to consider the articles of association.

Mr. W. A. Armstrong (Joint Hon. Sec.) stated that the number of applications for membership received was 230, and the paid-up subscriptions amounted to £487 3s., while donations amounting to £115 had also been received, making a total of £602 3s. The outstanding subscriptions amounted to £229 1s., and the total assets of the club when the subscriptions were fully paid up would be £831 4s. A sum of £350 had been paid as a deposit on the club's aeroplane, and a further £380 in this respect was outstanding.

It was further stated that, through the services of Lady Heath, the Club had secured the sum of £50 for a scholarship for the training as a pilot of one lady in the Free State. The Chairman said the Government had shown a friendly attitude towards the Club, and while it was not yet definitely fixed up, he believed they were to get a free aerodrome.

The recommendation that the Club be incorporated as a company limited by guarantee was passed, and the following were selected as the board of directors:—Col. Russel, Col. Fitzmaurice, Senator Gogarty, Messrs. O. G. Esmonde, M. P. Rowan, W. A. Armstrong, M. McDunphy, J. J. Reddy, F. M. Summerfield, and Fintan Fitzpatric.

THE LIGHT 'PLANE ATLANTIC FLIGHT

["FLIGHT" *Photograph*

Lt.-Commander H. C. MacDonald, a private owner-pilot, who started an Atlantic flight alone on October 17, from St. John's, Newfoundland, We regret to state that he is still missing, and at this distance of time further hope must be abandoned.

["FLIGHT" *Photograph*

THE MAIL (DAILY) 'PLANE: A D.H. 61 commercial biplane (Bristol "Jupiter XI" engine) which has been constructed by the de Havilland Aircraft Co. for the "Daily Mail," who will use it for newspaper carrying and general journalistic work. This machine, it may be added, is fitted with Handley Page slots.

LIGHT 'PLANE CLUBS

London Aeroplane Club, Stag Lane, Edgware. Sec., H. E. Perrin, 3, Clifford Street, London, W.1.

Bristol and Wessex Aeroplane Club, Filton, Gloucester. Secretary, Major G. S. Cooper, Filton Aerodrome, Patchway.

Cinque Ports Flying Club, Lympne, Hythe. Hon. Secretary, R. Dallas Brett, 114, High Street, Hythe, Kent.

Hampshire Aero Club, Hamble, Southampton. Secretary, H. J. Harrington, Hamble, Southampton.

Lancashire Aero Club, Wodford, Lancs. Secretary, F. W. Atherton, Woodford Aerodrome, Cheshire.

Liverpool and District Aero Club, Hooton, Cheshire. Hon. Secretary, Capt. Ellis, Hooton Aerodrome.

Midland Aero Club, Castle Bromwich, Birmingham. Secretary, Major Gilbert Dennison, 22, Villa Road, Handsworth, Birmingham.

Newcastle-on-Tyne Aero Club, Cramlington, Northumberland. Secretary, J. T. Dodds, Cramlington Aerodrome, Northumberland.

Norfolk and Norwich Aero Club, Mousehold, Norwich. Secretary, G. McEwen, The Aerodrome, Mousehold, Norwich.

Nottingham Aero Club, Hucknall, Nottingham. Hon. Secretary, Cecil R. Sands, A.C.A., Imperial Buildings, Victoria St., Nottingham.

The Scottish Flying Club, 101, St. Vincent Street, Glasgow. Secretary, Harry W. Smith.

Southern Aero Club, Shoreham, Sussex. Secretary, C. A. Boucher, Shoreham Aerodrome, Sussex.

Suffolk Aeroplane Club, Ipswich. Secretary, Maj. P. L. Holmes, The Aerodrome, Hadleigh, Suffolk.

Yorkshire Aeroplane Club, Sherburn-in-Elmet, Yorks. Secretary, Lieut.-Col. Walker, The Aerodrome, Sherburn-in-Elmet.

LONDON AEROPLANE CLUB

REPORT for week ending November 3.—Pilot instructors: V. H. Baker and F. R. Matthews. Ground engineer, C. Humphreys. Aircraft: The following machines were in commission during the week: G-EBNY, G-EBMP, G-EBXS. Total flying time for the week, 31 hrs. 5 mins.

Dual instruction: 29 members were given dual instruction and the flying time was 19 hrs. 10 mins.

Solo flying: 18 members with "A" licences made solo flights and the flying time was 9 hrs. 50 mins.

Passenger flights: 6 passenger flights were given to temporary members, and the flying time was 2 hrs. 5 mins.

October flying time.—The total flying time was as follows:—

	Flights.	Hours.	Minutes.
Dual instruction	189	76	20
Solo flying ("A" licences)	165	88	30
Solo flying (under instruction) ..	28	13	—
Passenger flights	43	18	35
Tests	101	16	50
	526	213	15

During the month 165 individual members of the club flew at Stag Lane, including 51 holders of "A" licences.

BRISTOL & WESSEX AEROPLANE CLUB, LTD.

REPORT for the week ending Saturday, November 3.—Pilot instructor: E. B. W. Bartlett. Ground engineer: A. W. Webb. Machines in commission: G-EBYH, G-EBTV. Flying time for the week: 14 hrs. 40 mins. Pupils under instruction and hours flown: 5, 2 hrs. 55 mins. Number of "A" pilots flying and hours flown: 7, 10 hrs. 15 mins. Number of passengers carried and hours flown, 4, 1 hr. 20 mins. Number of test flights and hours flown, 8, 1 hr. 20 mins.

Items of interest during the week have been conspicuous by their absence. Attendance has been good in spite of rather depressing meteorological conditions, and the "bar" has profited where flying has lost.

CINQUE PORTS FLYING CLUB

REPORT for week ending Saturday, November 3.—Pilot instructor: Maj. H. G. Travers, D.S.C. Ground engineer: Mr. R. H. Wynne. Machine: G-EBNN. Flying time, 9 hrs. 45 mins.

Dual instruction.—Mr. Clemetson, 30 mins; Mr. Cranmond, 45 mins.; Mr. Worsell, 30 mins.; Mr. Dallas Brett, 30 mins.; Mr. Law, 3 hrs. 45 mins.; Mr. Sargent, 3 hrs.; Mr. Wright, 15 mins. Seven members: total time, 9 hrs. 15 mins.

Test flights.—3, 30 mins.

It has now been decided that visiting private owner members of other flying clubs in possession of Air Ministry "A" or "B" licences, and also serving officers in the Royal Air Force, who are private owners, may be admitted as flying members of this club at a subscription of £2 2*s*. per annum without an entrance fee. This should be of great assistance to private owners travelling to and from the Continent and passing through Lympne.

Messrs. Law, Sargent, Clemetson and Worsell are nearly ready to be launched solo, and we hope to obtain quite a batch of "A" licences shortly.

HAMPSHIRE AEROPLANE CLUB

REPORT for week ending November 2.—Total flying time: 32 hrs. 40 mins. Dual instruction: 20 hrs. 40 mins. "A" pilots, 8 hrs. Solo, 2 hrs. Tests and passengers, 2 hrs.

Total time for the month of October: 120 hrs. 5 mins. Dual instruction: 68 hrs. 30 mins. "A" pilots, 23 hrs. 10 mins. Solo, 19 hrs. 15 mins. Tests and passengers, 9 hrs. 10 mins.

Instruction with Flight-Lieut. F. A. Swoffer, M.B.E., and Mr. W. H. Dudley, for the month.—Messrs. Buckley, Evans, Reuther, Courtney, Milford, Mattocks, Vernon, Harrison, Tobutt, Miller, Beagley, Crook, Inglis, Brewster, Grahame-Gibbs, Martin, Rice-Hunt, Cater, Castley, Wilson, Neave, Roy, Angus, Storey, Rumble, Fawkes, Cambell, Sturge, Endacott, Maj. Thorn, Miss Grace, Lieuts. Roskill, Oswald, Coode, Cmdr. Bell, Miss Melvill, Mrs. Gordon Smith, Miss Home, Lieut. Schreiber, Maj. Jenkins, Lieut. Litchfield-Speer, Cmdr. Hunt, Dr. Bowden, Mrs. Crook, Capt. Tweed, Sir Torquil Munro, Lieut. Couchman.

"A" pilots for the month.—Messrs. Sanders-Clark, Hall, Rayson, Evershed, Whittle, Baynes, Deane, Michelmore, Parker, Curtis-Nuthall, Wells, Falconer, Fry, Cambell, Sturge, Miss Grace, Lieut. du Cane, Lieut. Oliver, Cmdr. Tower, P.O. Leech, Flying Officer Southey, Lieut. Heath, Don J. de la Cierva, Lieut. Kennedy.

Soloists for the month.—Messrs. Evans, Rumble, Cmdr. Bell, Miss Home, Lieut. Schreiber, Lieut. Coode, Lieut. Oswald.

Passengers for the month.—Messrs. Alexander, Harding, Reeve, Graham, Silk, Young, Mitchell, Hutchinson, Watson, the Misses Eldred, Catt, Elizabeth Greenwood, Kerswell, Sugg, Dougas, Duncan, Wilson, Mrs. Baynes, Mrs. Rayson, Mrs. Jackson, Mrs. Swoffer, Mrs. Tower, Mrs. Grahame, H. Gibbs.

Cmdr. Bell has passed his figures of eight tests and height tests for his "A" licence; in the former test his machine came to rest exactly on the mat selected. Lieut. Oswald also made a very successful first solo on November 2.

We congratulate Mr. S. Schofield, of the Suffolk Club, on obtaining a commercial licence in America. We hope that now he has returned to this country, in a very short time the Suffolk club will have another member so that he can take him up in the Bluebird and sing to him, "Side by Side," as sung in America.

MIDLAND AERO CLUB

REPORT for week ending November 3.—The total flying time: 20 hrs. 27 mins. Dual: 6 hrs. 40 mins. Solo: 10 hrs. 20 mins. Passenger: 2 hrs. 35 mins. Tests: 52 mins.

The following members were given dual instruction by Flight-Lieut. T. Rose, D.F.C., and Mr. W. H. Sutcliffe:—R. G. Welch, M. Blakeway, J. Cobb, C. T. Davis, H. Bramish, G. P. Haylock, W. L. Handley, J. A. Ridsdale, W. J. Halland, Major D. Thomson, A. E. Coltman, T. W. Wild, F. D. Scott, M. C. Wilks.

"A" Pilots: E. P. Lane, E. C. Baxter, H. J. Willis, S. H. Smith, S. G. Hall, J. Rowley, R. L. Jackson, H. Lattey, E. D. Wynn, R. D. Bednell, W. Swann, G. C. Jones.

Solo: R. G. Welch, J. B. Briggs, W. J. Halland, A. E. Coltman, J. W. Astley, M. C. Wilks, W. L. Handley, J. K. Morton, F. D. Scott.

On Sunday, Mr. W. L. Handley passed all flying tests for his "A" licence, and on Saturday, Mr. F. D. Scott successfully made his first solo.

Extremely bad weather restricted flying.

NEWCASTLE-UPON-TYNE AERO CLUB

REPORT for week ending November 3.—Pilot instructor: G. M. S. Kemp. Ground engineer: K. C. Brown. Machines: 2. P.T. and L.X. Flying time for week: 25 hrs. 20 mins. Pupils: (10), 13 hrs. Soloists, "A" Pilots (12): 11 hrs. Passengers (8): 1 hr. 10 mins. Tests: 10 mins.

New pupils: Messrs. Stainthorpe and Cook.

We were pleased to receive a visit on Saturday last from Sir Alan J. Cobham. He was staying in Newcastle over the week-end, where he delivered his lecture on his African trip. A number of club members attended this lecture, which was well worth hearing.

One of our oldest members, Mr. MacMillan, paid us a visit and completed the necessary three hours' solo, for the renewal of his "B" licence. He is at present engaged in the "Movie" business in California, and appears to be doing very well.

NORFOLK & NORWICH AERO CLUB

REPORT for week ending November 3.—Total flying time: 16 hrs. 20 mins. Instructor: B. Young. Ground engineer: A. Kirkby. Machines in commission (2): ZW and QX. Dual: 2 hrs. Solo training: 2 hrs. 10 mins. "A" licence pilots: 11 hrs. 50 mins. Test flying: 20 mins.

We congratulate Mr. Rope on the double height test he made, and also sympathise with him. He ascended to the necessary height, but the barograph chart failed to record any altitude whatever, as the small nib had jarred off the arm. This caused another trip to the upper regions in rather chilly weather, and the second time it was attended with success. The weather being none too good for flying except on two days, when it was really exceptional for the time of year, we have not been able to do very much flying and neither has any interesting event happened aerobatically or otherwise.

NOTTINGHAM AERO CLUB

REPORT for week ending October 2.—Pilot instructor: Bernard Martin. Engineer: A. J. Harris. Machines, two. Flying time, 14 hrs. 15 mins. Instruction, 4 hrs. "A" licence pilots, 7 hrs. 35 mins.; solo (under instruction), 50 mins.; passengers, 45 mins.; tests, 1 hr. 5 mins.

Instruction (with Mr. Martin): Messrs. Thorpe, Kay, Hutchinson, Cudlip, Granger, Dr. Lyons.

Solo, "A" licence: Messrs. Bradley, Selvey, Whitby, Pilgrim, Taylor, Ball.

Solo (under instruction): Messrs. Hall, Winn.

Passengers: Miss Evans, Messrs. Spalding, Lander, Barker.

One party we have missed during this week has been our friends the "Sky" (?) writers, who have had to give in to the bad weather. A spot of blue broke in the sky and they flew like "birds" to Hendon. We would like to announce that there is a distinct increase to our membership in spite of the very bad weather.

Mr. C. Ball, one of our original members, flew to Cambridge and back on Friday, the 2nd.

SUFFOLK & EASTERN COUNTIES AEROPLANE CLUB

REPORT for week ending November 3.—Instructor: G. E. Lowdell, A.F.M. Ground engineers: "C," E. Mayhew; "A," G. Keeley. Two Blackburn "Bluebirds," RE and UH. SZ for renewal of C. of A. Flying time: 16 hrs. 55 mins. Seven members were given dual instruction (8 hrs. 35 mins.). Two members flew solo under instruction (15 mins.). Flights were made by five "A" licence members (6 hrs. 45 mins.). Three passengers were carried (25 mins.). Ten tests were made (55 mins.). Two new members, Mr. Ripley and Mr. Collingwood, started instruction during the week.

Mr. Welsh, after 7 hrs. 25 mins, and Mr. Wedd, after 9 hrs. 30 mins., made their first solo flights during the week. Both put up an excellent performance and made perfect landings, thus justifying our policy of not attempting to rush members through too quickly for the purpose of subsidy snatching.

Mr. S. Schofield made two cross-country flights to Cambridge, and Mr. H. B. Collins, our latest "A" licence member, went to Colchester.

During a busy period on Sunday, an aileron was damaged, landing in a very gusty wind. This was replaced by a spare during the lunch hour, so that flying was not held up.

Our member is much annoyed with our Hampshire friends. Mr. Ripley having flown with a friend at Hamble, was so bitten with the aviation bug that he has joined up at Hadleigh; thus, our member has to share the machines with another. The Committee, however, offer their hearty thanks

to Hampshire, and trust that they will send along more members, either to Hadleigh or Cambridge. With regard to Cambridge, things are moving fast and flying should start within the next two weeks.

YORKSHIRE AEROPLANE CLUB

REPORT for week ending November 3.—Pilot Instructor: Capt. G. R. Beck. Ground engineer: R. Morris. Machines in commission: 2 (SV and RF). Flying time: 18 hrs. 40 mins. Instruction 7 (3 hrs. 55 mins.). Soloists: 2 (58 mins.). "A" Pilots: 12 (10 hrs. 30 mins.). Passengers: 7 (3 hrs. 15 mins.). Test flights: 1 (5 mins.).

The Leeds branch of the Royal Aeronautical Society held their monthly meeting at our club house on Tuesday, October 30, when a very interesting paper was read by Maj. Scott, C.B.E., A.F.C., who is to be the pilot of R.100, on "The Operation of Large Rigid Airships." The attendance was good and included many members of the Airship Construction Staff from Howden.

A number of members of the Yorkshire Aeroplane Club joined the Leeds branch of the Royal Aeronautical Society as a result of this meeting.

We regret to announce the death of one of our members, Mr. S. W. Evans, as a result of a motor accident last week, and extend our deepest sympathy to his relatives in their bereavement.

FROM THE FLYING SCHOOLS

The De Havilland Flying School, Stag Lane Aerodrome

REPORT for week ending November 4.—Total flying time: 132 hrs. 15 mins. Instruction (dual): 56 hrs. 10 mins.; (solo), 32 hrs. 20 mins. Other flying: 43 hrs. 45 mins

Despite the unfavourable weather a considerable amount of flying has taken place, and 11 new Gipsy "Moths" were duly tested and handed over.

Amongst the new owners taking delivery was Señor Ansaldo, who has evidently great faith in British products, for on his first flight he gave a daring exhibition of aerobatics.

On Tuesday we were honoured by a further visit from Sir Samuel and Lady Hoare, who were accompanied by Señorita D'Alvarez, the well-known tennis player. Both the ladies thoroughly enjoyed flights in "Moths"—Lady Hoare being piloted by Capt. G. de Havilland in the new "Gipsy Moth Coupé," the latest "enclosed" light aeroplane.

On Friday, Mr. Chamberlin, the Atlantic airman, was transported to Southampton by "Moth" aeroplane, just in time to catch his boat—despite a much delayed start from Stag Lane.

Altogether, a busy and interesting week.

Henderson Flying School, Brooklands Aerodrome

REPORT for week ending November 1.—Instructors: Lieut.-Col. Henderson and Capt. H. D. Davis. Ground engineres: A. A. Anderson, W. A. Watts, W. Baker. Machines in commission: Mono Avro G.-AACA; Renault Avro G-EBVE. Flying time: 10 hrs. 50 mins. Nineteen pupils under instruction (5 hrs. 20 mins.). Eleven soloists (5 hrs. 30 mins.). Three "A" Pilots (1 hr. 45 mins.). 30 mins. engine tests.

Messrs. Glenny and Guiness have now completed all their tests for their "A" licences.

The occasion of Mr. S. S. Daniel's night flying was marked by an exceptionally good performance by Mr. A. A. Anderson, who flew the machine from Brooklands aerodrome to Croydon in the dark in order to help Mr. Daniel carry out his tests for his "B" licence. These were satisfactorily carried out.

Australian-England Flight

CAPT. F. HURLEY, Flying Officer Moir and Flying Officer Owens, who are flying to England from Australia in a Ryan monoplane, landed at Daly Waters on the Gulf of Carpentaria, Northern Australia, on November 1, having flown 900 miles from Oodnadatta, in Central Australia, mostly against head winds. They arrived at Sourabaya, Java, on November 5, after a successful flight across the Timor Sea.

R.A.F. Flying Boat Cruise

THE four R.A.F. "Supermarine-Southampton Napier" flying-boats which flew from England to Singapore and Australia, left Singapore for Kuching, the capital of Sarawak, Borneo, on November 1.

Check to London-Cape Town Flight

CAPT. HALSE, who, accompanied by his wife, left Stag Lane on September 10 in a D.H. "Gipsy Moth" for South Africa, has been held up at Mongalla with a broken airscrew.

Dutch East Indies Air Services

ON November 1 the civil air service in the Dutch East Indies was opened by the Governor-General at Batavia. Daily flights will be made between Batavia and Sourabaya via Samarang, and between Batavia and Bandoeng. Four of the Fokker monoplanes (Armstrong-Siddeley "Lynx") which flew out from Amsterdam to Batavia recently will operate the lines. The fifth machine is scheduled to start its return flight to Amsterdam to-day (November 8). A Batavia-Singapore service will commence on January 1, 1929.

Clarence Chamberlin's Hustle

WISHING to catch the "Leviathan" at Southampton, *en route* for America, on November 2, Mr. Clarence Chamberlin left Stag Lane at 12.15 p.m.—just one hour before the sailing time of the liner—in a D.H. "Moth" piloted by Capt. Pike. The 72 miles to Hamble were covered in 42 mins., leaving 18 mins. to reach the docks by car. When the docks were reached, the "Leviathan" was already in mid-stream, so Mr. Chamberlin gave chase in a motor boat, and eventually succeeded in overtaking her and getting aboard. Incidentally, Lady Heath was also on board the liner, and on November 4 lectured on her flight from Cape Town to London.

U.S. Air Disaster

CAPT. C. D. COLLYER and Mr. H. Tucker, who recently accomplished a record non-stop flight from Long Island to Los Angeles in the Vega monoplane "Yankee Doodle," were killed on November 4 while attempting to beat their previous record. Their machine crashed on a mountain near Phoenix, Arizona.

English Pilot Killed in Canada

FLYING OFFICER A. E. REYNOLDS was killed in an air crash on November 8 when flying at Borden aviation base, Ontario, Canada. His passenger, Major W. H. Currie, of Ottawa, was seriously injured. The former went to Canada a few months ago from England with a Government engagement.

French Airwoman as Taxi-Pilot

MADAME MARYSE BASTIE is reported to be the first Frenchwoman to obtain a certificate enabling her to carry passengers by air. She has purchased a light aeroplane and will ply for hire as a living.

French Air Mail Mishap

AN air mail machine flying on the Paris-Lyons-Marseilles service crashed near St. Vallier on October 31, killing the pilot and severely injuring his only passenger.

New French Air Line Proposed

A WEEKLY air line between Marseilles and Syria is expected to start early next spring. It has been decided that the chief seaplane port in Syria shall be in Tripolis.

Air Port for Spain

AN air port for the proposed airship services across the South Atlantic from Spain to Buenos Aires will be commenced shortly.

New Zealand's First Commercial Airway Company

THE first Commercial aviation company in New Zealand, the Southern Cross Airways, Limited, has been formed at Auckland with a capital of £5,000.

That Air Service to India

IT is announced that final negotiations have now been concluded with the Persian Government regarding the extension of the Imperial air route to Karachi from Cairo, which has hitherto terminated at Basra.

Household Brigade Flying Club

THE newly-formed Household Brigade Flying Club—which is confined to officers of the Guards, and already has a membership of about 50—is holding an "At home" at H.Q., Brooklands Aerodrome, on November 9.

Australian Seaplane Carrier

THE Australian Navy's new seaplane carrier "Albatross" has just been completed at the Cockatoo Dockyard, Sydney, and will shortly undergo sea trials.

Missing R.A.F. Airmen

A R.A.F. AEROPLANE, piloted by P/O C. L. Myers, accompanied by Aircraftsman No. 359,460 H. Chadwick, left Catterick Aerodrome on November 6 for photographic duty, and failed to return. Although a wide search—by land and air—was made, no further news of the personnel or the machine has, up to the time of going to press, been received.

The Byrd Antarctic Expedition

COMMANDER BYRD and some of his party have arrived at Wellington, and were given a civic welcome.

THE ROYAL AIR FORCE

London Gazette, October 30, 1928.

General Duties Branch

Sub.-Lt. M. T. Cowin, R.N., is granted a temp. comm. as a Flying Officer on attachment for duty with the R.A.F. (Oct. 21); Flying Officer H. E. E. Weblin is granted the honorary rank of Flight-Lt. (Oct. 31): Pilot Officer H. G. Wheeler is promoted to rank of Flying Officer with effect from Sept. 15, and with seniority of June 11. The follg. Pilot Officers are promoted to rank of Flying Officer:—D. J. T. Haynes (May 15); P. F. G. Bradley, G. W. Monk, R. C. Hancock, J. E. Stuart-Lyon (Sept. 19); M. Fountain-Barber (Oct. 2); R. G. Forbes (Oct. 6).

Air Commodore C. R. Samson, C.M.G., D.S.O., A.F.C., is restored to full pay from half-pay (Oct. 1).

The follg. Flight Lts. are placed on retired list at their own request:—The Hon. J. H. B. Rodney, M.C. (Oct. 14); B. C. H. Cross, D.F.C. (Oct. 15); H. E. Searson, D.F.C. (Oct. 19). The follg. are transferred to Reserve, Class B. (Oct. 24):—Flight Lts. F. W. Clarke, D. E. Ward. Flying Officers S. Herbert, E. S. Osborn, L. A. Parker.

Flight-Lt. E. C. W. Fitzherbert, M.B.E., D.S.C., is transferred to Reserve Class C. (Oct. 24); Pilot Officer on probation D. A. Woolfe resigns his short service commn. (Oct. 19); Flight-Lt. M. H. Butler, D.F.C., relinquishes his short service comm. on account of ill-health and is granted permission to retain his rank (Oct. 24).

Stores Branch

The follg. Pilot Officers on probation are confirmed in rank and promoted to rank of Flying Officer (Oct. 15):—C. M. P. Hartley, T. A. Head.

Medical Branch

Flight Lt. (Hon. Squadron Leader) C. A. Meaden resigns his temp. comm., and is permitted to retain the honorary rank of Squadron-Leader (Oct. 22).

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

Flying Officer L. A. Parker is employed with the Regular Air Force for a period of two years (Oct. 24); H. H. White is granted a commn. in Class C as Flying Officer (Oct. 30). The follg. Pilot Officers are promoted to rank of Flying Officer:—G. A. R. Malcolm (Oct. 26); R. P. S. Taylor (Oct. 27); J. P. Rae (Oct. 28). The follg. Pilot Officers on probation are confirmed in rank:—C. R. S. Smith (June 13); J. I. Muir (Oct. 24).

Flying Officer C. W. Carleton, A.F.C., is transferred from Class A. to Class C. (Oct. 12); *Flying Officer J. R. W. Alexander is transferred from Class A.A.* to Class C (Oct. 19).

The follg. Flying Officers relinquish their commns. on completion of service:—E. M. Ling (Oct. 24); C. D. Robertson, M.M. (Oct. 29). Flying Officer V. F. R. Hill relinquishes his commn. on completion of service, and is permitted to retain his rank (Oct. 24).

AUXILIARY AIR FORCE

General Duties Branch

Pilot Officer R. Faulds is transferred from No. 602, City of Glasgow (Bombing) Squadron to No. 600, City of London (Bombing) Squadron (Oct. 18).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commanders: A. H. S. Steele-Perkins, O.B.E., to H.M.S. *Hermes*, for duty as Senior Air Force Officer, 19.10.28. A. Shekleton, D.S.O., to Aircraft Depot, Iraq, pending taking over command, 20.10.28. J. A. G. De Courcy, M.C., to No. 70 Sqdn., Iraq, pending taking over command, 20.10.28.

Squadron Leaders: J. V. Read, M.B.E., to R.A.F. Depot, Middle East, 10.10.28. D. E. Stodart, D.S.O., D.F.C., to Armoured Car Wing, Iraq, 20.10.28. E. B. Rice to No. 70 Squadron, Iraq, 20.10.28. J. W. Woodhouse, D.S.O., M.C., to No. 55 Sqdn., Iraq, 20.10.28. W. E. Reason to Aircraft Depot, Iraq, 20.10.28. O. C. Bryson, M.C., D.F.C., A.M., to No. 5 Sqdn., India, 20.10.28.

Flight Lieutenants: F. A. Norton to Home Aircraft Depot, Henlow, 22.10.28. J. M. Mason, D.S.C., D.F.C., to No. 70 Sqdn., Iraq, 20.10.28. E. I. Bussell to No. 84 Sqdn., Iraq, 20.10.28. Geo. T. H. Pack to Aircraft Depot, Iraq, 20. 10.28. B. B. Caswell to Armoured Car Wing, Iraq, 20.10.28. G. L. Carter and E. M. Drummond to H.Q., Iraq, 20.10.28. N. L. Desoer to No. 20 Sqdn., India, 20.10.28. C. H. Harrison to Aircraft Park, India, 20.10.28.

Flying Officers: N. C. Pleasance and J. H. Harris, to No. 84 Sqdn., Iraq, 20.10.28. S. R. Sherman to No. 6 Sqdn., Iraq, 20.10.28. E. V. S. Lacey and V. Q. Blackden to No. 20 Sqdn., India, 20.10.28. F. F. W. Hall to Station H.Q., Kohat, 20.10.28. P. Slocombe to Aircraft Depot, India, 20.10.28. H. D. Spreckley to No. 60 Sqdn., India, 20.10.28. H. A. G. Comerford and W. G. H. Ewing, to No. 28 Sqdn., India, 20.10.28.

Pilot Officers: G. W. Monk and R. C. Hancock to No. 20 Sqdn., India, 20.10.28. R. G. Forbes to Aircraft Depot, India, 20.10.28..

Stores Branch

Wing Commander W. J. Shields to Aircraft Depot, Iraq, 20.10.28.

Squadron Leaders: G. Stevens, O.B.E., to H.Q., Iraq, 20.10.28. A. J. Briddon to Aircraft Depot, Iraq, 20.10.28.

Flight Lieutenants: W. Sutherland, M.B.E., to H.Q., Iraq, 20.10.28. J. K. McDonald to Station H.Q., Hinaidi, 20.10.28. W. St. J. Littlewood to Supply Services, Iraq, 20.10.28.

Flying Officers: H. D. Jackman to Aircraft Depot, Iraq, 20.10.28. H. J. Bamber to Supply & Stores Depot, Aden, 20.10.28. R. S. Sawyer to Aircraft Park, India, 20.10.28.

Accountant Branch

Wing Commander H. G. Jones to H.Q., Iraq, 20.10.28.

Squadron Leader W. G. W. Prall to Station H.Q., Hinaidi, 20. 10.28.

Flight Lieutenant V. G. A. Bennett to Station H.Q., Hinaidi, 20.10.28.

Flying Officer J. H. S. Richards to Station H.Q., Hinaidi, 20. 10.28.

Medical Branch

Wing Commander T. S. Rippon, O.B.E., to R.A.F. General Hospital, Iraq, 20.10.28.

Squadron Leader E. A. Lumley, M.C., M.B., to R.A.F. Depot, Uxbridge, 31.10.28.

Flight Lieutenants: R. G. Freeman to H.Q., Middle East, 20.10.28. J. Hutchieson, M.B., to H.Q., India, 20.10.28.

Flying Officer A. R. French to R.A.F. Base, Malta, 20.10.28.

Chaplains' Branch

Revd. K. C. H. Warner, D.S.O., M.A., to No. 4 Flying Training School, Middle East, 20.10.28. Revd. J. H. Ogilvie, M.A., to H.Q., Iraq, 20.10.28.

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AIR MINISTRY NOTICES TO AIRMEN

Index 20th October, 1928

IT is notified that the Index dated April 14, 1928, is cancelled and a new one, which can be obtained at the Air Ministry, substituted therefor:—

This enumerates the Notices to Airmen cancelled. This list includes:—

(*a*) Notices which are cancelled through incorporation in the Air Pilot or Air Pilot Monthly Supplements (indicated by an asterisk, thus*).

(*b*) Notices notified as cancelled previously or which need no longer be retained.

Note.—Among the Notices in class (*b*) are certain Notices which were issued to call attention to Orders-in-Council. The cancellation of such Notices in no way affects the Orders in force.

Operative Notices remaining operative until further Notice are also given.

To facilitate reference, an indication of the principal contents of a Notice is given if this is not made clear by the title. If part of a Notice has been cancelled this also is indicated.

NOTICE TO GROUND ENGINEERS

D.H.6 Aircraft: Essential Modifications

1. The modifications described herein must be satisfactorily incorporated in all existing D.H.6 aircraft before any such aircraft is submitted for re-inspection for renewal of the certificate of airworthiness.

2. A fireproof bulkhead must be fitted to insulate the engine bay from the rest of the aircraft, and, in addition, adequate protection must be provided for the underside of the fuselage.

3. Some means must be provided to lead all waste petrol and oil clear of the fuselage.

4. No certificate of airworthiness will be issued or renewed in respect of any D.H.6 aircraft unless the above-mentioned modifications have been satisfactorily incorporated.

(No. 4 of 1928.)

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PERSONALS

To be Married

The engagement is announced, and the wedding will shortly take place, between Mr. NORMAN STUART ALLINSON, R.A.F., elder son of the Rev. H. C. W. Allinson and Mrs. Allinson, of Sheerness, and MISS FLORENCE MURIEL ("BUNTY") HALL, only daughter of the late Mr. and Mrs. G. B. Hall, of Eastbourne.

The engagement is announced between MR. ROWLAND R. WALLACE ("ROY"), of 8, Highlands Park, Burnt Oak, Edgware, and MISS MARY ALEX. WALLER, daughter of Mr. and Mrs. Mortlake Waller, of Highgate.

PUBLICATIONS RECEIVED

Report on the Royal Air Force Promotion Examinations "B" and "C," held on February 27, 28, 29, *and March* 1, 1928.—Air Publication 1350. H.M. Stationery Office, Kingsway, London, W.C.2. Price 1*s.* net.

The Motor Manual. 27th Edition. Temple Press, Ltd., 5-15, Rosebery Avenue, London, E.C.1. Price 2*s* 6*d* net.

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AERONAUTICAL PATENT SPECIFICATIONS

(*Abbreviations*: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.)

APPLIED FOR IN 1927

Published November 8, 1928

18,275. F. H. PAGE and HANDLEY PAGE, LTD. Means for controlling aeroplanes. (298,508.)

28,654. F. C. BRAY. Construction of bodies for aeroplanes. (298,782.)

32,269. FIAT SOC. ANON. Aeroplane wing structures and means for attaching them to fuselage. (281,672.)

APPLIED FOR IN 1928

Published November 8, 1928

8,993. E. NORDQUIST. Synchronised firing-arrangement for aircraft, machine-guns, etc. (291,021.)